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M. Thangaraj

MADRAS INSTITUTE OF DEVELOPMENT STUDIES
79, SECOND MAIN ROAD, GANDHI NAGAR, ADYAR
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The agricultural holdings, in India, are found not in one compact block but in many parcels or fragments scattered into several places all over the village. Sub-division and fragmentation of holdings is one of the major causes for the low productivity in agriculture and is one of the serious handicaps for economic development in our country. Sub-division of holdings involves the breaking up of a single holding into scattered parcels. Consolidation of land holdings is designed to reverse the division of land into smaller units. Legislation on consolidation of land holdings is one of the important measures of land reform legislations in India. The legislative measures on consolidation consists of two parts. One relates to prevention of fragmentation and the second deals with procedure for consolidation of holdings. Landed property is directly affected by laws of inheritence. Subdivision of land is the traditional attitude associated with the religious laws and customs. Hindu, Muslim, Sikh and Christian religions have special personal laws as to how the ancestral landed property is

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to be divided among the family members. According to the Hindu law of succession and inheritance, the ancestral landed property is to be equally shared among all male heirs. In each succeeding generation, the number of parcels increases and the parcels become smaller. Each parcel of land was shared among the multiple heirs to a proportionate share without regard to good or bad land. This would result in a division of land into minute strips. The female members are also entitled to share the ancestral property along with the male members in the family by the recent amendment. Roy mentions two types of Hindu law of inheritance which are in vogue viz. Mitakshara and Dayabhaga.[1]

The Agricultural Census for the year 1976-77 and 1980-81 (Table 1) show that the relative position of agricultural holdings below 2 ha. in the total number of operational holdings increased from 72.7 per cent in 1976-77 to 74.7 per cent in 1980-81. The share of these holdings in the total operated area also increased from 23.5 percent in 1976-77 to 26.2 per cent in 1980-81. The proportion of large holdings (above 10 ha.) decreased from 3 per cent in 1976-77 to 2.4 per cent in 1980-81. Their share in the total operated area also decreased from 25.2 per cent in 1976-77 to 23 per cent in 1980-81. It is significant to note that the increase in total number of holdings was faster than the increase in the total area operated between 1980-81 and 1976-77. The average area per holding declined from 2.00 ha. in 1976-77 to 1.84 ha. in 1980-81 while the total number of holdings increased by 9 per cent. The main reason for the increase in the

Table 1 : Distribution of number and area of operational holdings in 1976-77 and 1981-82 : All india

Category of holdings and size group	No. of holdings ('000)		Area operated ('000 hectares)		Average size of holding	
	1976-77	1980-81	1976-77	1980-81	1976-77	1980-81
1. Marginal (Less than 1 ha)	44523 (54.6)	50122 (56.4)	77509 (10.7)	19735 (12.1)	1.74	0.39
2. Small (1.0 to 2.0 ha)	14728 (18.1)	16072 (18.1)	20905 (12.8)	23169 (14.1)	1.42	1.44
3. Semi Medium (2.0 to 4.0 ha)	11666 (14.3)	12455 (14.0)	32428 (19.9)	34645 (21.2)	2.78	2.78
4. Medium (4.0 to 10.0 ha)	8212 (10.1)	8068 (9.1)	49628 (30.4)	48543 (29.6)	6.04	6.02
5. Large (10.0 ha and above)	2440 (3.0)	2166 (2.4)	42873 (25.2)	37705 (23.0)	17.57	17.41
Total	81569 (100.0)	88883 (100.0)	163343 (100.0)	163797 (100.0)	2.00	1.84

Note: Figures in brackets indicate the percentages to respective column.

Source: 1. Government of India, All India Report on Agricultural Census 1976-77, Ministry of Agriculture, Department of Agriculture and Co-operation, New Delhi, 1983.

2. Government of India, All India Report on Agricultural Census 1980-81, Ministry of Agriculture, Department of Agriculture and Co-operation, New Delhi, 1987.

number of operational holdings and decrease in the average size of holdings is possibly due to the combined effect of redistribution of surplus land through land reform legislations and sub division of land among the family members due to law of inheritance. According to Bandyopadhyay,[2] ".... the phenomenel increase in the number of marginal operational holdings from 36.20 million in 1970-71 to 50.52 (SIC) million in 1980-81. Of course, distribution of ceiling surplus land to 3.24 million beneficiaries has to be accounted for in this figure. Even deducting the number of 3.24 million new beneficiary marginal landholders the net figure would be 47.28 million - an increase of 11.08 million over 10 years. It means that on an average 1.1 million marginal holdings are coming into existance annually". Professor Kurien also indicates the process or marginalisation has been going on in India. Marginal holdings (below 1 ha.) accounted for 50 per cent of all holdings in 1970-71, 54.5 per cent in 1976-77 and 56.5 per cent in 1980-81. The annual rate of marginalisation was 3.98 per cent or 4 per cent which was significantly higher than the 1.9 per cent annual ate of growth of rural population between 1971 and 1981. It, perhaps, indicates that marginalisation was more due to immiserisation rather than normal devolution of property[3]. The increase in the total number of holdings or fragmentation of land into multitude or tiny plots may also occur due to breaking up of joint holdings (pattas) into many holdings.[4] A village level study in Tamil Nadu shows that "sub-divisions or operational parcels under single pattas have not increased much in these 90 years (1890-

1981)-only from 462 to 475-with the average (owned) operational single patta holding decreasing from 0.97 acres to 0.87 acres. But sub-division under joint pattas have nearly doubled from 159 to 305 with average (owned) operational holdings under joint pattas decreasing from 0.80 to 0.68 acres. Joint pattas have thus provided a way out when the holding size, due to progressive sub-division, becomes too small for further carving up". Moreover, farmers are not willing to sell their land even if it is a minute parcel and often minute parcels are left as fallow due to attachment and sentiment towards the ancestral property. Thus, attachment and sentiments towards ancestral property which make farmers stick on to a piece of land also works against consolidation of holdings. Given the natural limitation of agricultural land, in term of extent, sub-division of land is bound to happen due to population explotion and the law of succession and inheritance.

Sub-division of land may take place, as a result of the following reasons also. 1) decay of village industries, 2) return of servicemen after retirement to share the ancestral property 3) usurious rate of interest by the village money lenders causing sales of fragments of land to repay them and 4) sale of land for other reasons. In the light of the foregoing discussion, an increase in the number of fragments may be explained as due to sub-division of land among the family members, sub-division of land under joint pattas and redistribution of surplus land to the landless; and the other causes also, this in turn would have resulted in decline in the average area per parcel.

This paper seeks to examine the nature and trends in the fragments of operational holdings for rural India. The data were obtained from the NSS report Nos.144[5] (1961-62) and 331[6] (1981-82) on number of parcels in the holdings and average area per parcel. The trend in the fragments of land holdings is examined through (1) number of parcels in the holdings and (2) average area per parcel. The analysis is presented first at All India level followed by the analysis pertaining to the State level. An attempt also has been made to reconstruct the classification made by the Report of the National Commission of Agriculture[7] (NCA) based on the progress of legislation on consolidation of holdings. Before we go into the analysis of data, let us briefly look at the definition of operational holdings, fragments (parcels), consolidation of holdings and the evoluation of legislative measures on consolidation of holdings. It is hoped that this will serve as background information for analysis of data.

The NSS has defined Operational Holdings thus in ..... "An operational holding was a techno-economic unit used wholly or partly for agricultural production and operated (directed/managed) by one person alone or with the assistance of others, without regard to title, size or location. The holdings might consist of one or more parcels of land provided they were located within the country and these as a whole formed part of the same technical unit.- - - - . Holdings put exclusively to livestock and poultry raising and for production of livestock and

poultry products (primary) and/or pisciculture were considered as operational holdings whereas holdings put exclusively to uses other than agricultural production were not considered as operational holdings. Holdings coming under the operations of co-operative farms were also not considered as operational holdings".[8]

`A parcel of an operational holding was a piece of land entirely surrounded by other operational holdings or by land not forming of any operational holdings. It might consist of one or more fragments or fields'[9]. `Consolidation of holdings means the re-arrangement of holdings in any area among several tenure-holders in such a way as to make the holdings held by them more compact. The measure aims at giving every rightholder a compact area equavalent in value to what he held in scattered plots'[10]. Thus consolidation of holdings offers a solution to the problem of fragments in the holdings.

Disadvantages are many in the fragmentation of holdings. The excessive sub-division or land may lead to (1) holdings becoming uneconomic and uneconomic holdings are inadequate to support the family, (2) productivity may decrease when the size of holding is too small (3) scientific methods cannot be applied and (4) farmers with the uneconomic holdings are not likely to be sufficiently credit worthy to obtain loans to follow modern methods of agriculture. The report on the NCA lists out the disadvantages of fragmentation. They are given below:

i) Full and proper land utilisation is hampered often, the

small size of holdings render them unprofitable to cultivate.

ii) There is useless expenditure and waste of time in moving labour, cattle, seed, manure and irrigation water from one plot to another, and in bringing the harvested crop to a single threshing floor.

iii) Supervision of farm operation becomes difficult.

iv) Expenses on irrigation,, farming, drainage etc, increase.

v) Access to the scattered fields becomes difficult during the crop season and leads to disputes and tensions over trespass etc.

vi) Fragmentation of a holding results in loss of land on boundaries.

Inspite of these disadvantages, a controversy is going with regard to consolidation of holdings. P.C.Bassil quotes Moomaw[11] who has argued that scattered land results in less risk of crop failure. When holdings are scattered in different places, then one field might suffer from flood or drought while fields in other localities might escape. A study[12] conducted in 5 consolidated villages and 5 unconsolidated villages shows that the human and bullock labour absorption was less in the consolidated villages than in the unconsolidated villages. However, the author suggests that the surplus labour can be absorbed by intensifying the cultivation on consolidated holdings than on unconsolidated holdings. We need not go into the details of the controversy, as it is a well established fact that the

advantages are more than disadvantages of consolidation of holdings.

Consolidation of holdings is not merely a re-arrangement or exchange of plots but it is also an essential and integral part of schemes for the economic and social development. Care has been taken in this programme for provision of inter village roads, reservation of land for public utility such as schools, play grounds, dispensaries, tanks, etc.

The Report of the NCA also lists out a series of Acts which were enacted on consolidation of holdings in India after independence. Bombay passed its Act in 1947, Punjab in 1948, Uttar Pradesh and Himachal Pradesh in 1953, Rajasthan in 1954, West Bengal in 1955, Andhra Pradesh and Bihar in 1956, Madhya Pradesh in 1959, Assam in 1960, Jammu and Kashmir in 1962 and Maharashtra adopted the Bombay Act of 1947, Haryana continued to follow the Punjab Act after this new state was carved out in 1966. The Orissa Act was passed in 1972. States such as Tamil Nadu and Kerala have not yet enacted legislative measures for consolidation so far.

The Report of the NCA classifies the Indian States into six categories based on the enactment and implementation of the Act on consolidation of holdings. The classification is given below:

1. States in which substantial progress has been made and which have plans for total coverage - Uttar Pradesh, Punjab, and Haryana.

2. States in which substantial progress is shown though

total coverage is not yet completed -Maharashtra and Himachal Pradesh.

3. States in which some work has been done - Madhya Pradesh, Rajasthan, Gujarat and Karnataka;

4. States in which experimental work has been done - Jammu & Kashmir, Bihar, and Andhra Pradesh;

5. States in which no progress has been made though legislation has already been enacted - West Bengal, Assam and Orissa; and

6. States in which legislation has not so far been enacted - Tamil Nadu and Kerala.

Progress of Consolidation of Land Holdings

A government report in 1983 noted that "According to the information collected from the Ministry of Rural Development, the work of consolidation of holdings has been completed in Haryana, Punjab and Uttar Pradesh. It has made good progress in Bihar, Himachal Pradesh, Gujarat, Maharashtra and Orissa as the laws in these states provide for compulsory consolidation. Madhya Pradesh and West Bengal laws provide for voluntary consolidation while no such law exists in Andhra Pradesh, Kerala, Manipur, Tamil Nadu and Tripura. There is no scope for consolidation in Meghalaya, Mizoram, Nagaland and Arunachal Pradesh. Altogether only 31.4 per cent of the cultivated area has been consolidated - - - - ."[13]

The progress of consolidation of land holdings as presented in Table (2) clearly shows that out of 544.66 lakhh hectares of

Table 2 - State-wise Progress of Consolidation

(Area in lakh hectares)

Name of the State	Area Consolidated: Upto V Plan	Area Consolidated: During VI Plan	Area Consolidated: During 1985-86	Total area consolidated till March 1986
Andhra Pradesh	3.31	-	-	3.31
Bihar	6.43	1.26	-	7.69
Delhi	2.57	-	-	2.57
Gujarat	18.08	6.09	0.86	25.03
Himachal Pradesh	4.49	1.12	0.35	5.96
Jammu and Kashmir	0.47	-	-	0.47
Karnataka	10.83	-	-	10.83
Madhya Pradesh	38.66	-	-	38.66
Maharashtra	140.93	33.66	7.72	182.31
Orissa	0.46	3.48	0.19	4.13
Punjab	48.37	0.48	0.07	48.92
Haryana	42.28	0.46	0.05	42.79
Rajasthan	17.12	-	-	17.12
Uttar Pradesh	133.50	18.20	3.17	154.87
Total	467.50	64.75	12.41	544.66

Source: Agenda papers for conference of Revenue Secretaries and Revenue Ministers (24th and 25th November, 1986), Government of India, Ministry of Agriculture, Department of rural development, New Delhi.

land consolidated upto March 1986, 467.50 lakh acres or 86 per cent of the land was consolidated upto V Plan, 64.75 lakh hectares or 12 per cent of land was consolidated during VI Plan and 12.41 lakh hectares or 2 per cent of land was consolidated during 1985-86. It is significant to note that about one-third of land consolidated upto March 1986 was from Maharashtra; 28 per cent of the land fromm Uttar Pradesh and about 24 per cent of the land from Madhya Pradesh, Punjab and Haryana. According to Agricultural Census 1981, the total area operated was 16379700 ha. The proportion of total area consolidated upto March 1986 to the total area operated in 1981 was only 33.3 per cent. Thus the data clearly shows that an attempt to consolidate the agricultural holdings through legislative measures had only limited success.

Results and Discussion

Change in the ownership of land holdings may be beneficial or baneful. They are beneficial, if the transfer of land helps in consolidation of scattered parcels in the holdings. They are baneful, if they create subdivision of land. Table 3 gives details relating to the average number of fragments and average area per parcel in the holdings for All India, and 15 states as well.

ALL INDIA

The average number of parcels in the operational holdings has declined and the average area per parcel has increased over a period of 20 years at All India level. This is well illustrated

Table 3 - Number of parcels per operational holding and average area of parcels for each size class of operational holdings

Size of operational holdings	All India				Andhra Pradesh				Assam				Bihar			
	1961-62		1981-82		1961-62		1981-82		1961-62		1981-82		1961-62		1981-82	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-
0.002-0.20	1.82	0.05	1.50	0.04	1.63	0.06	1.38	0.04	1.18	0.10	1.45	0.05	2.23	0.05	1.96	0.03
0.21 -0.40	3.07	0.10	2.93	0.10	2.43	0.11	1.99	0.14	1.56	0.19	1.69	0.19	3.56	0.09	4.31	0.07
0.41 -1.00	4.45	0.15	4.01	0.16	2.95	0.22	2.73	0.24	2.15	0.32	2.39	0.29	5.86	0.11	6.65	0.09
1.01 -2.02	6.05	0.23	5.18	0.28	4.32	0.33	3.84	0.36	2.96	0.48	3.46	0.42	8.04	0.18	9.19	0.16
2.03 -3.03	6.79	0.35	5.63	0.43	5.03	0.47	3.99	0.60	3.50	0.68	4.10	0.59	10.97	0.22	11.81	0.20
3.04 -4.04	7.63	0.45	6.39	0.54	5.10	0.66	5.30	0.65	3.90	0.89	4.62	0.76	12.95	0.27	12.19	0.28
4.05 -5.05	7.56	0.57	5.50	0.81	5.06	0.84	5.11	0.86	5.44	0.83	5.65	0.80	14.42	0.30	11.97	0.37
5.06 -6.07	8.02	0.67	6.57	0.84	6.18	0.87	6.53	0.84	5.76	0.90	4.98	1.09	17.30	0.32	15.49	0.35
6.08 -8.09	7.92	0.85	6.01	1.14	6.64	0.98	7.02	0.98	3.67	1.39	5.44	1.31	17.63	0.38	13.42	0.51
8.10-10.12	8.78	0.97	6.06	1.47	9.38	0.93	7.01	1.27	9.00	0.99	5.11	1.70	19.41	0.45	13.28	0.66
10.13-12.14	8.00	1.33	6.46	1.70	7.65	1.36	6.82	1.63	-	-	1.00	10.52	13.95	0.80	21.10	0.52
12.15-20.24	8.07	1.80	6.68	2.25	8.35	1.73	9.76	1.56	6.00	1.69	7.19	2.19	18.09	0.78	10.84	1.35
20.25 & above	9.44	3.15	7.44	3.86	10.91	2.68	10.49	2.73	-	-	-	-	27.33	1.03	35.54	0.71
All sizes	5.66	0.47	4.04	0.41	4.32	0.66	3.53	0.57	2.75	0.53	2.65	0.49	7.18	0.21	6.27	0.16

X = Number of parcels per holding.
Y = Average area per parcel in hectare.

Source:

1. Government of India, National Sample Survey (NSS), Number 144, Tables with notes on same aspects of land holdings in rural areas, Seventeenth Round Sept.1961 - July 1962, Delhi 1968.

2. Government of India, NSS Number 331 Report on land holdings - 2: Same aspects of operational holdings, Thirty Seventh Round, Jan-Dec.1982, New Delhi, 1986.

Table-3. Contd. Number of parcels per operational holding and average area of parcels for each size class of operational holdings

Size of operational holdings	Gujarat				Jammu and Kashmir				Kerala				Karnataka			
	1961-62		1981-82		1961-62		1981-82		1961-62		1981-82		1961-62		1981-82	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	-	-	1.00	-	-	-	5.69	-	-	-	1.00	-	-	-	1.20	-
0.002- 0.20	1.72	0.09	1.07	0.02	1.88	0.06	1.94	0.04	1.14	0.08	1.09	0.06	1.35	0.04	1.12	0.03
0.21 - 0.40	1.81	0.16	2.34	0.12	2.64	0.12	3.50	0.08	1.41	0.20	1.60	0.18	1.85	0.14	1.90	0.13
0.41 - 1.00	2.40	0.29	2.46	0.27	3.98	0.17	4.49	0.15	2.13	0.29	2.09	0.30	2.31	0.30	2.52	0.28
1.01 - 2.02	3.49	0.41	3.01	0.48	5.83	0.24	5.16	0.27	3.40	0.42	2.97	0.47	3.18	0.46	3.39	0.43
2.03 - 3.03	4.17	0.57	3.21	0.75	6.63	0.36	6.49	0.36	3.73	0.64	3.78	0.63	3.85	0.64	3.29	0.74
3.04 - 4.04	4.39	0.73	3.10	1.10	7.96	0.43	7.98	0.41	5.33	0.62	3.89	0.88	4.62	0.73	3.98	0.85
4.05 - 5.05	4.16	0.91	4.15	1.10	8.00	0.53	4.74	0.93	5.54	0.83	4.84	0.92	4.37	1.03	3.70	1.21
5.06 - 6.07	5.09	1.09	3.52	1.58	10.00	0.56	12.17	0.45	5.75	1.01	4.00	1.31	4.32	1.27	6.14	0.91
6.08 - 8.09	5.37	1.24	3.90	1.77	9.80	0.64	18.16	0.36	6.78	0.92	9.01	0.77	4.54	1.54	4.36	1.61
8.10 -10.12	6.24	1.28	4.34	2.06	12.00	4.78	21.81	0.40	8.00	1.21	3.00	3.01	5.12	1.74	4.21	2.10
10.13 -12.14	6.57	1.66	4.00	2.77	5.00	1.13	1.00	10.85	4.00	3.64	5.00	2.02	5.38	2.08	6.21	1.78
12.15 -20.24	6.67	2.23	5.92	2.45	5.00	2.43	-	-	10.00	1.17	5.24	2.54	5.19	2.82	6.08	2.36
20.25 & above	9.62	3.00	6.52	3.66	5.75	3.98	-	-	8.50	3.77	-	-	7.33	3.87	5.59	4.59
All sizes	4.30	1.04	2.94	0.88	5.09	0.28	4.65	0.23	2.01	0.37	1.61	0.27	3.79	1.09	3.07	0.80

Table - 3 Contd. Number of parcels per operational holding and average area of parcels for each size class of operational holdings

Size of operational holdings	Madhya Pradesh				Maharashtra				Orissa				Punjab & Haryana			
	1961-62		1981-82		1961-62		1981-82		1961-62		1981-82		1961-62 *		1981-82	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	-	-	1.00	-	-	-	1.00	-	-	-	1.56	-	-	-	1.03	-
0.002- 0.20	1.26	0.07	1.35	0.03	1.73	0.05	1.16	0.03	2.19	0.03	1.28	0.05	2.19	0.03	1.43	0.01
0.21 - 0.40	2.10	0.13	1.60	0.16	2.52	0.12	1.93	0.15	3.52	0.08	3.98	0.07	4.73	0.06	2.27	0.12
0.41 - 1.00	3.13	0.23	2.12	0.30	0.30	0.25	2.32	0.28	4.60	0.14	4.53	0.15	3.75	0.17	2.21	0.32
1.01 - 2.02	4.31	0.34	3.63	0.40	3.50	0.41	3.21	0.44	6.08	0.23	6.24	0.24	4.32	0.32	3.11	0.48
2.03 - 3.03	4.95	0.50	4.22	0.58	3.51	0.70	3.17	0.77	8.32	0.28	6.66	0.37	4.65	0.53	4.00	0.61
3.04 - 4.04	5.99	0.58	5.43	0.64	3.83	0.90	4.33	0.81	9.92	0.34	7.17	0.48	5.28	0.64	4.30	0.80
4.05 - 5.05	6.02	0.73	5.11	0.88	3.95	1.13	3.59	1.24	10.64	0.42	7.58	0.59	4.86	0.89	3.59	1.24
5.06 - 6.07	6.36	0.85	7.54	0.73	4.12	1.32	3.92	1.41	9.91	0.53	9.10	0.60	5.13	1.01	4.63	1.19
6.08 - 8.09	7.11	0.97	6.52	1.06	4.66	1.43	4.18	1.66	12.59	0.53	9.19	0.72	5.43	1.19	4.78	1.43
8.10 -10.12	8.14	1.07	7.37	1.14	5.10	1.72	4.36	2.03	11.08	0.80	9.23	0.96	5.71	1.44	5.63	1.58
10.13 -12.14	8.37	1.29	5.91	1.84	4.67	2.27	4.75	2.30	15.46	0.65	15.24	0.70	6.82	1.55	4.76	2.31
12.15 -20.24	9.77	1.47	7.16	2.10	4.58	3.06	5.88	2.55	10.56	1.53	8.50	1.67	6.40	1.96	5.13	2.85
20.25 & above	13.72	2.25	10.27	2.70	7.57	3.90	7.49	3.46	8.30	2.78	6.51	6.04	7.27	2.88	5.37	4.69
All sizes	5.30	0.75	3.92	0.69	3.78	1.23	3.04	0.98	6.39	0.31	5.02	0.29	4.76	0.81	2.74	0.75

* = Figures relate to erstwhile State of Punjab which consisted of Punjab and Haryana.

Table - 3 Contd. Number of parcels per operational holdings and average area of parcels for each size class of operational holdings

Size of operational holdings	Rajasthan				Tamil Nadu				Uttar Pradesh				West Bengal			
	1961-62		1981-82		1961-62		1981-82		1961-62		1981-82		1961-62		1981-82	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-
0.002- 0.20	0.92	0.07	1.89	0.02	1.69	0.06	1.19	0.03	2.31	0.05	1.70	0.04	1.64	0.06	1.63	0.04
0.21 - 0.40	1.94	0.52	3.04	0.10	3.07	0.11	2.10	0.14	3.86	0.07	3.04	0.09	2.90	0.11	3.78	0.08
0.41 - 1.00	2.96	0.24	4.16	0.18	3.77	0.18	2.74	0.24	6.15	0.11	4.06	0.16	5.26	0.13	5.86	0.11
1.01 - 2.02	3.66	0.40	4.84	0.31	5.40	0.26	3.67	0.36	8.33	0.17	5.11	0.28	7.48	0.19	9.45	0.15
2.03 - 3.03	3.89	0.61	6.18	0.40	6.58	0.36	3.88	0.62	9.27	0.26	6.06	0.41	10.02	0.24	12.03	0.20
3.04 - 4.04	4.29	0.81	6.11	0.57	9.05	0.44	5.34	0.65	11.57	0.28	6.54	0.53	13.38	0.26	16.69	0.21
4.05 - 5.05	5.49	0.74	4.94	0.90	9.20	0.48	5.39	0.81	11.85	0.38	6.66	0.67	12.68	0.32	11.78	0.38
5.06 - 6.07	5.18	1.02	5.35	1.04	11.00	0.50	6.54	0.83	13.47	0.39	7.29	0.75	16.36	0.34	20.35	0.27
6.07 - 8.09	5.25	1.24	5.05	1.33	11.61	0.59	7.08	0.95	14.02	0.47	7.16	0.97	16.12	0.44	11.18	0.61
8.10 -10.12	5.30	1.55	5.58	1.64	10.52	0.82	6.39	1.34	18.96	0.40	7.87	1.14	22.29	0.41	13.32	0.67
10.13 -12.14	5.85	1.85	5.21	2.12	13.60	0.79	8.91	1.23	13.96	0.67	8.20	1.33	35.75	0.40	23.99	0.45
12.15 -20.24	5.20	2.78	5.09	3.06	17.83	0.81	3.93	3.58	22.52	0.66	10.43	1.40	26.17	0.37	14.00	0.93
20.25 & above	4.64	7.15	4.10	8.09	20.60	1.23	6.53	4.57	21.76	1.18	6.77	3.60	-	-	15.00	1.75
All sizes	4.27	1.30	4.71	0.80	4.96	0.30	2.54	0.35	7.78	0.23	4.17	0.31	7.12	0.22	5.38	0.14

by the data presented in the Table 3. It is evident from the table that average number of parcels per holding has declined from 5.66 in 1961-62 to 4.04 in 1981-82 for all size class. There was also a decline in the number of parcels per holdings in each size class. The average area per parcel has declined from 0.47 ha. in 1961-62 to 0.41 ha. in 1981-82 for all size classes together. But average area per parcel has increased in each size classes except 0.002 - 0.20 ha. at All India level. The decrease in the average area per parcel in the holding size classes of 0.002 - 0.20 ha. and all sizes was due to the fact that there was an increase in the area and number under the small size holdings and decrease in the area and number under the large size holdings, that is, there was a shift of land from the larger size holdings not only to the smaller size holdings but also to the landless. The average area per parcel was less than one ha. for the holding size classes upto 10.00 ha. in 1961-62 and upto 6.00 ha., in 1981-82. Thus the data clearly indicate that there was a reduction in the number of fragments and increase in the average area per parcel at All India level. The reduction in the number of fragments and increase in the average area per parcel are also illustrated with the help of figures for All India and the States as well. The number of parcels per holding is presented in the vertical axis in figure `a'; the average area per parcel is presented in the vertical axis in figure `b'; and the percentage change in the number of parcels per holding* and the

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* Percentage change in the number of parcels per holding = $\frac{\text{No. of parcels in 1981-82}}{\text{No. of parcels in 1961-62}} \times 100$

percentage change in the average area per parcel ** are presented in the vertical axis in Figure 'C'. The size classes of operational holdings are presented in the horizontal axes of figures a, b and c.The figures 1a, 1b also show that there was a decline in the average number of parcels and increase in the average area per parcel in the holdings in 1981-82 than in 1961-62 for all size classes. The figures further indicate that there was a progress in the consolidation of holdings in 1981-82, but the progress was more in the case of small and large size holdings than in the medium size holdings. Figure 1C shows the percentage change in the average number of fragments and average area per parcel in the holdings. The percentage change in the number of fragments and average area per parcel move in the opposite direction. This again shows the progress of consolidation of holdings at All India level.

THE STATES

An analysis pertaining to data at the State level with respect to the over-all size class shows that there was a decrease in the average number of parcels in the holdings in all States except Rajasthan and the average number of parcels in the holdings decreased marginally in Assam. There was also a decrease in the average area per parcel for all States except Tamil Nadu and Uttar Pradesh. The data with regard to the size class of 0.002 - 0.20 ha. reveal that the average number of

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** Percentage change in the average area per parcel = (average area per parcel in 1981-82 / average area per parcel in 1961-62) X 100

parcels in the holdings decreased in eleven States viz., Andhra Pradesh, Bihar, Gujarat, Kerala, Karnataka, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal; the average area per parcel, among all the States, has increased only in Orissa in 1981-82 than in 1961-62. The table also shows that, among all the States, four States which have made a substantial progress in the reduction of fragments and increase in the average area per parcel were Madhya Pradesh, Punjab, Tamil Nadu and Uttar Pradesh.

In Madhya Pradesh, except the size classes of 0.002-0.20 and 5.06 - 6.07 ha., the average number of fragments has declined and the average area per parcel has increased for all size classes, the figures 9(a) 9(b) and 9(c) show that the progress was more in the case of small and large size holdings. In Punjab, the average number of fragments has declined for all size classes and the average area per parcel has increased for all size classes barring the lowest size (0.002 - 0.20 ha) class. Though there was a progress in all size classes, but the progress was more in the small and large size classes (Figures 12(a), 12(b) and 12(c).

In Tamil Nadu, the average number of fragments has declined for all size classes and the average area per parcel has increased for all size classes except the lowest size class. It is clear from the figures 14(a), 14(b) and 14(c) that there was a progress in the reduction of fragments and an increase in the average area per parcel, but the progress was positively associated with the size of holdings. Almost a similar pattern

is observed in Uttar Pradesh with respect to average number of parcels and average area per parcel in the holdings as in Tamil Nadu.

Nine States which had progress in the reduction of number of fragments and increase in the average area per parcel, but where the progress was not substantial, were Andhra Pradesh, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Orissa and West Bengal. Out of these nine States, two states, viz Jammu and Kashmir and Kerala, had more progress with respect to the large size holdings; and Gujarat, Orissa and West Bengal with respect to the middle and large size holdings; Andhra Pradesh with respect to the small size holdings; Bihar and Karnataka with respect to the middle size class; Maharashtra with respect to the small and large size classes. The other two States viz., Assam and Rajasthan had no progress at all in the reduction of fragments and increase in the average area per parcel when all size classes are taken together in 1981-82 than in 1961-62. The reduction in the number of parcels and increase in the average area per parcel was only in two size classes (5.06-6.07 and 8.10-10.12 ha) in Assam. Reduction of fragments had taken place in the large size class (15.00 ha and above) and increase in the average area per parcel in the middle and large size classes (4.00 ha and above) in Rajasthan. The figures 3(a), 3(b), 3(c), 13(a), 13(b) and 13(c) show that the trend vary irregularly over the years in Assam and Rajasthan.

It can be safely inferred from the data given in the Table 2

that the reduction in the fragments in the holdings and increase in the average area per parcel in the operational holdings in rural India was in progress and therefore, it is possible to argue that the problem of consolidation of holdings is getting reduced. In other words the problem of fragments is not so acute in 1981-82 than in 1961-62. This observation is quit different to what has been expected in the earlier section that the fragmentation of holdings will increase. However, it is difficult to say as to what are the forces behind the change in the number of fragments and consequently increase in the average area per parcel. There are many ways by which the fragments in the holdings can be reduced. It can be reduced as a result of Government intervention through legislative measures on prevention of fragmentation and consolidation of holdings and sale of land (fragment) from the contiguous land owners and/or exchange of land (fragment) among the land owners.

Statewise data on the number of fragments in the holdings is shown in the Table 4. Ranks have been assigned to all States on the basis of number of parcels. In Kerala, the average number of parcels in the holdings was minimum with 2.01 parcels (Rank 1) and in Uttar Pradesh was the highest with 7.78 parcels (Rank No.15) in 1961-62. In the matter of parcel per holding, Kerala took the first rank with 1.61 parcels and Bihar 15th rank with 6.27 parcels in the holdings in 1981-82. It is important to note that there was a marked improvement in the reduction of fragments in five states viz. Gujarat, Madhya Pradesh, Punjab, Tamil Nadu and Uttar Pradesh. In these five States there was a

forward mobility in the position of reduction in the fragments in 1981-82 over 1961-62, that is, these States have moved into a higher rank.

An attempt has been made to group the Indian States on the basis of the progress in the reduction of fragments of operational holdings. The new classification is different, though not fully, from the NCA classification. The following is the new classification.

1. The States in which substantial progress has been made - Madhya Pradesh, Punjab, Tamil Nadu and Uttar Pradesh.

2. The States in which progress has been made but not substantial - Andhra Pradesh, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Orissa and West Bengal.

3. The States in which no progress has been made - Assam and Rajasthan.

An endeavour has been made to compare the progress in the reduction of fragments of operational holdings with the productivity of land. The question of size and productivity of land has been often discussed and debated by the social scientists but the question remains inconclusive. The data on yield per hectare for total food grains (total kharif and rabi) have been collected from various estimates of area and production of principal crops in India. The distribution of yield per hectare for total food grains is shown in Table 5. It would be seen that there was a substantial increase in the yield per

Table 4 - Progress of the consolidation of operational holdings

States	Average number of parcels	
	1961-62	1981-82
1. Andhra Pradesh	4.32 (7)	3.53 (8)
2. Assam	2.75 (2)	2.65 (3)
3. Bihar	7.18 (14)	6.27 (15)
4. Gujarat	4.30 (6)	2.94 (5)
5. Jammu and Kashmir	5.09 (10)	4.65 (11)
6. Kerala	2.01 (1)	1.61 (1)
7. Karnataka	3.79 (4)	3.07 (7)
8. Madhya Pradesh	5.30 (11)	3.92 (9)
9. Maharashtra	3.78 (3)	3.04 (6,
10. Orissa	6.39 (12)	5.02 (13)
11. Punjab	4.76 (8)	2.74 (4)
12. Rajasthan	4.24 (5)	4.71 (12)
13. Tamil Nadu	4.96 (9)	2.54 (2)
14. Uttar Pradesh	7.78 (15)	4.17 (10)
15. West Bengal	7.12 (13)	5.38 (14)
All India	5.66	4.04

Note: Figures in the brackets indicate ranks for the respective States.

hectare in 6 States viz. Punjab, Jammu and Kashmir, Gujarat, Karnataka, Tamil Nadu and Uttar Pradesh; there was a progress in the yield per hectare but the progress was not substantial in 5 states viz. Andhra Pradesh, West Bengal, Bihar, Kerala and Maharashtra; slow progress has been observed in 4 States viz. Assam, Madhya Pradesh, Orissa and Rajasthan. The data clearly indicate that there was no relationship between the progress in the reduction of fragments of operational holdings and productivity of land by states. Thus the classification States based on productivity is different from the NCA classification of States based on the enactment and implementation of the Act on consolidation of holdings and the classification of States based on the broad observation of this present study.

It is significant to note that there was an increase in the percentage of holdings under the marginal holdings and decrease in the percentage in the rest of the holdings in 1980-81 over 1976-77 (Table 1) at All India level; while there was a decline in the average area per parcel in the size class of less than 0.20 ha. and increase in the average area per parcel in the rest of the holdings (Table 3) may be explained by the fact that there was a tremendous increase in the new holdings with mostly one or two parcels under the marginal holdings led to decrease in the average area per parcel in the size class of less than 0.20 ha. and there was a consolidation in the rest of the holdings which led to increase in the average area per parcel in the size classes of more than 0.20 ha. The distinct features exhibited by

TABLE 5: DISTRIBUTION OF YIELD PER HECTARE IN KGS FOR TOTAL FOOD GRAINS

(Total: Kharif and Rabi Food Grains)

	1964-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	80-81
1. Andhra Pradesh	816	709	827	778	767	784	781	839	762	922	964	960	842	971	1106	1080	1147
2. Assam	972	938	866	923	989	890	973	945	1042	971	943	996	913	998	942	866	1073
3. Bihar	780	746	469	877	904	760	975	930	920	809	862	907	903	938	977	763	1031
4. Gujarat	868	491	470	657	484	851	864	856	511	804	564	891	856	865	977	914	1901
5. Jammu and Kashmir	736	842	902	885	1360	1434	1220	1236	1205	1249	1267	1245	1103	1361	1431	1332	1559
6. Kerala	1340	1194	1299	1331	1455	1339	1426	1485	1514	1384	1458	1466	1414	1488	1528	1573	1587
7. Karnataka	632	475	605	645	685	748	830	828	786	926	922	972	784	1025	994	989	1023
8. Madhya Pradesh	651	465	425	635	556	591	640	682	623	615	608	688	560	704	658	430	688
9. Maharashtra	523	383	473	518	540	509	433	407	291	515	556	650	683	723	711	736	693
10. Orissa	929	681	812	799	989	876	883	732	822	848	661	859	675	853	863	600	870
11. Punjab and Haryana	992	873	895	1247	1341	1487	1551	1584	1473	1431	1499	1625	1689	1760	1992	1998	2061
12. Rajasthan	450	343	378	522	366	416	666	501	423	488	425	624	620	591	629	446	531
13. Tamil Nadu	1120	1054	1146	1125	1126	1288	1342	1345	1365	1447	1162	1417	1291	1462	1475	1459	1340
14. Uttar Pradesh	834	739	642	870	840	903	998	914	938	812	866	1026	1041	1114	1165	833	1206
15. West Bengal	1117	979	958	1020	1221	1280	1224	11277	1109	1087	1182	1253	1155	1364	1350	1163	1358
All India	757	636	644	783	781	805	872	858	813	827	831	944	894	991	1022	876	1032

Source: Estimates of area and production of principal crops in India (for various years), Directorate of Economics and Statistics, Department of Agriculture and Co-operations, Ministry of Agriculture, Government of India.

the Table 3 that there was a positive relationship between the average area per parcel and size of the operational holdings at All India and the States as well. There was a decrease in the average number of parcels in the holdings and increase in the average area per parcel in 1981-82 over 1961-62 at All India level and the States as well except Assam and Rajasthan. Thus the data clearly indicate that the problem of fragmentation was not more acute in 1981-82 than in 1961-62. Even without legislation on consolidation of holdings, there was a progress in the reduction of fragments in two States viz. Kerala and Tamil Nadu. The progress would have been much more, had there been a legislation on consolidation of holdings. More over, the progress in the reduction of fragments has been absserved to be more in the States where legislation on consolidation of holdings has already been enacted.

The States like Tamil Nadu, which have no legislation, but still have made a remarkable progress in the reduction of fragmentation of holdings. No explanation is availat e as to how the progress has been made. Accurate information on this question is lacking and this has to be investigated in the future research. However, there might have taken place some amount of voluntary exchange of land among the farmers leading to consolidation.

Since our country predominantly depends upon agriculture, the fragmentation of land has to be prevented through a legislative measure in all States. Such law has to specify the minimum amount of land (fragment) that can be partitioned and

anything less than that has to be prevented. A provision also has to be made in the law that the owners of the contiguous plots have to be given preference to buy the land at reasonal price. Some States may neglect the question of fragments as it is an intricate subject. But it is very important and appropriate subject that can not be neglected no longer. A comprehensive study has to be undertaken to investigate the question of consolidation of holdings as to see what are the forces operate in it, at the micro level. This will, of course, clarify many of our doubts. No doubt, the statistics presented in this paper show that there was a progress in the consolidation of operational holdings in India. Government intervention through legislative measures and voluntary exchange of land may be the main reasons for the progress in the consolidation of operational holdings in India.

A Note on Figures

In all figures (a, b and c), the horizontal axis represents size class of operational holdings in ha. where

a = 0.002 - 0.20 ha.
b = 0.21 - 0.40 ha.
c = 0.41 - 1.00 ha.
d = 1.01 - 2.02 ha.
e = 2.03 - 3.03 ha.
f = 3.04 - 4.04 ha.
g = 4.05 - 5.05 ha.
h = 5.06 - 6.07 ha.
i = 6.08 - 8.09 ha.
j = 8.10 -10.12 ha.
k = 10.13 -12.14 ha.
l = 12.15 -20.24 ha.
m = 20.25 & above ha.

In 'figure a' number of parcels per holding, in 'figure b' average area per parcel in ha., and in 'figure c' percentage change in the number of parcels per holding (X) and average area per parcel (Y) are shown on the vertical axis.

ALL INDIA

Figure 1.a.

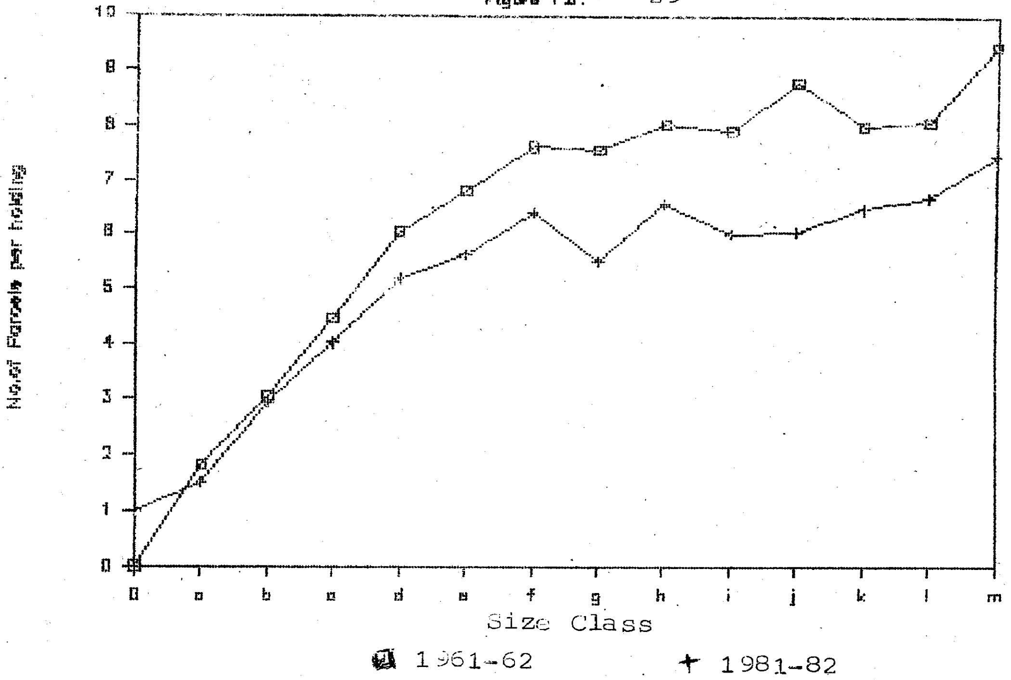


Figure 1.b.

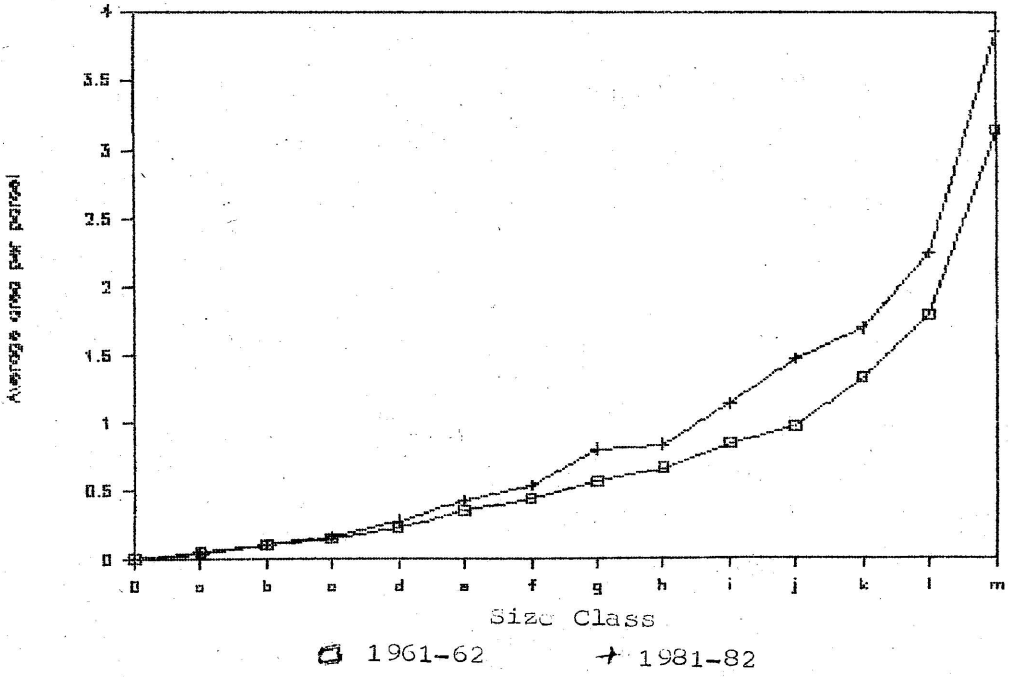
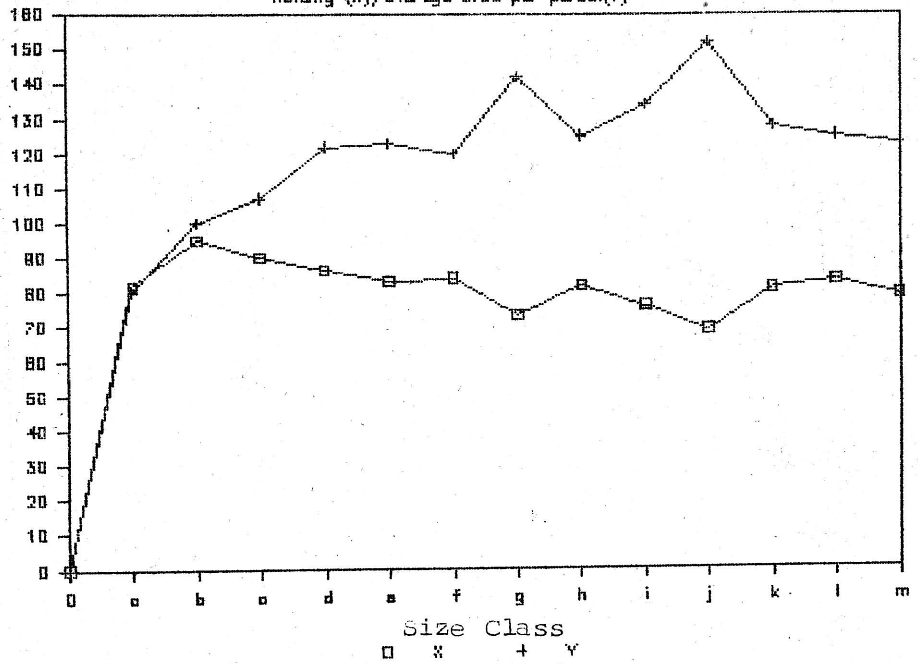


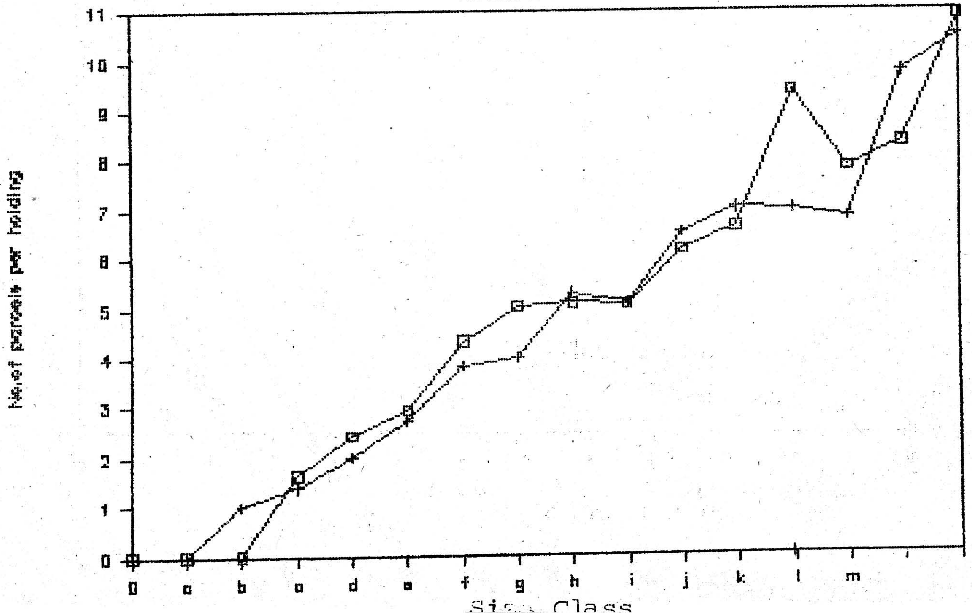
Figure 1.c

% change in the no.of parcels per holding (X)/average area per parcel(Y)



ANDHRA PRADESH

FIGURE 2.a.



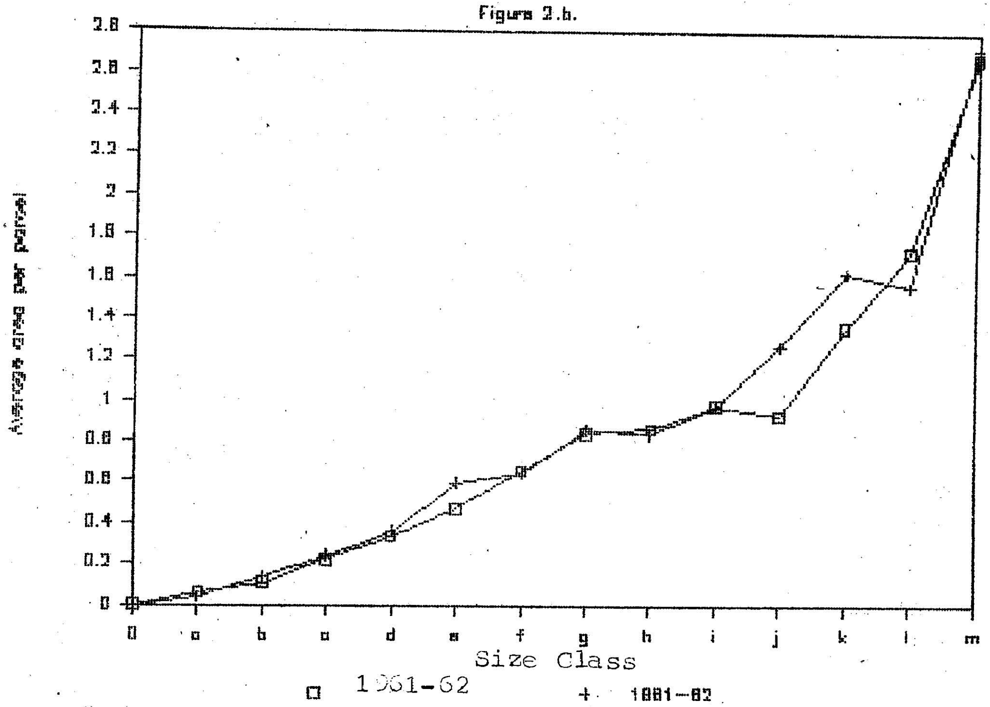
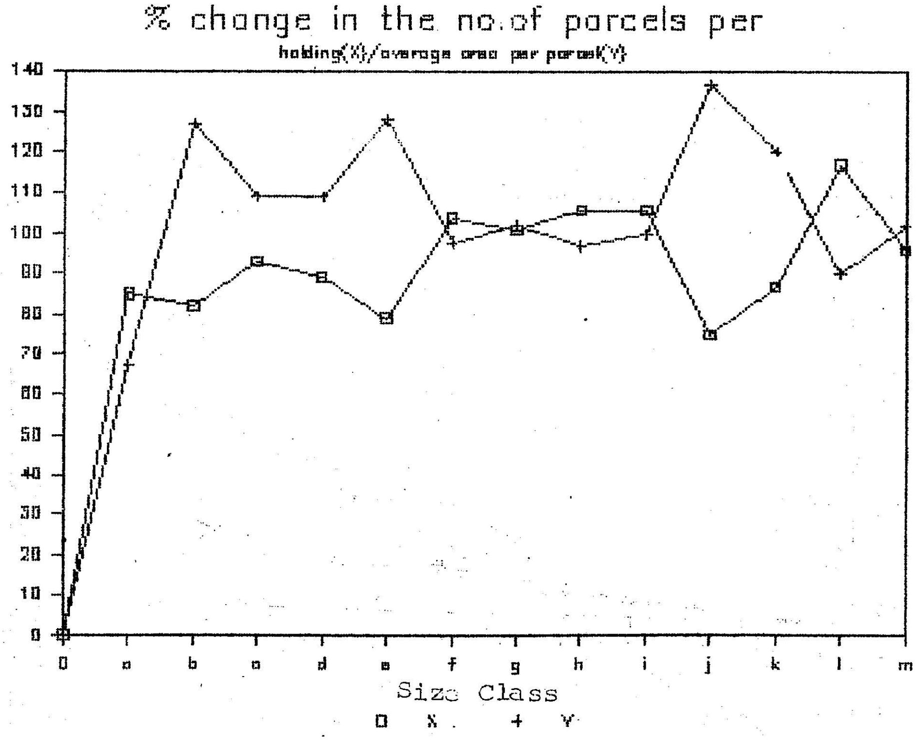


Figure 2.b.
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Average area per parcel
0
a
b
c
d
e
f
g
h
i
j
k
l
m
Size Class
1961-62
1981-82

Figure 2.c


% change in the no.of parcels per
holding(X)/average area per parcel(Y)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
a
b
c
d
e
f
g
h
i
j
k
l
m
Size Class
X
Y

ASSAM

Figure 3.a.

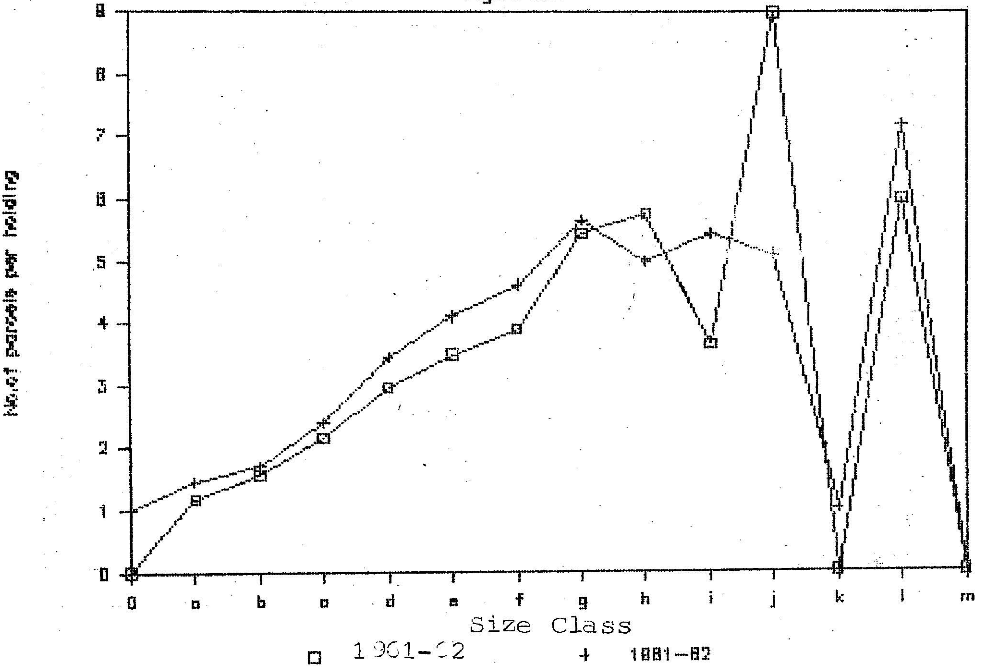


Figure 3.b.

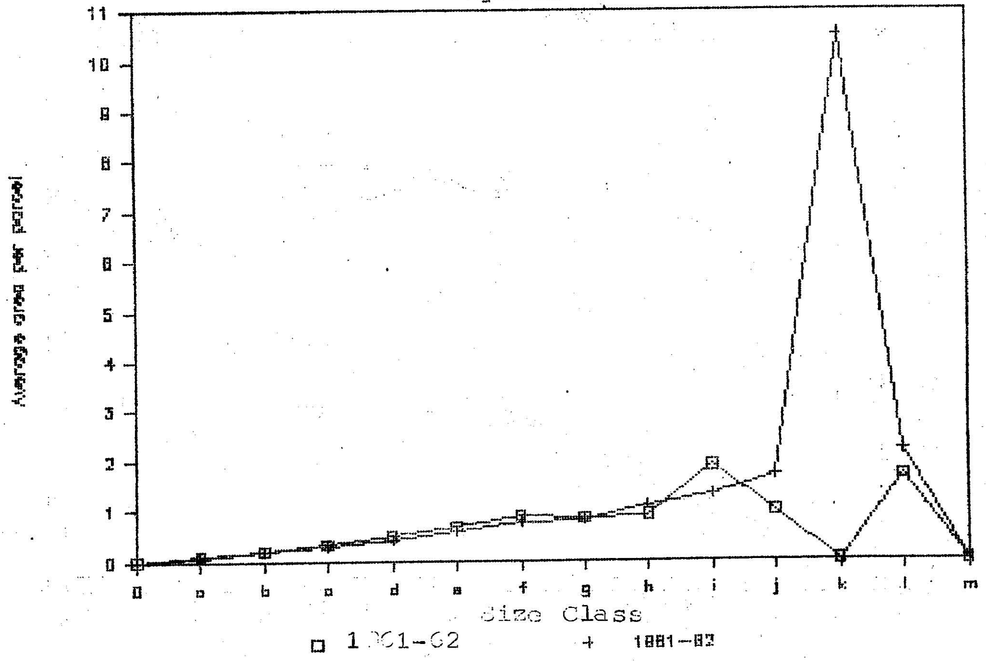
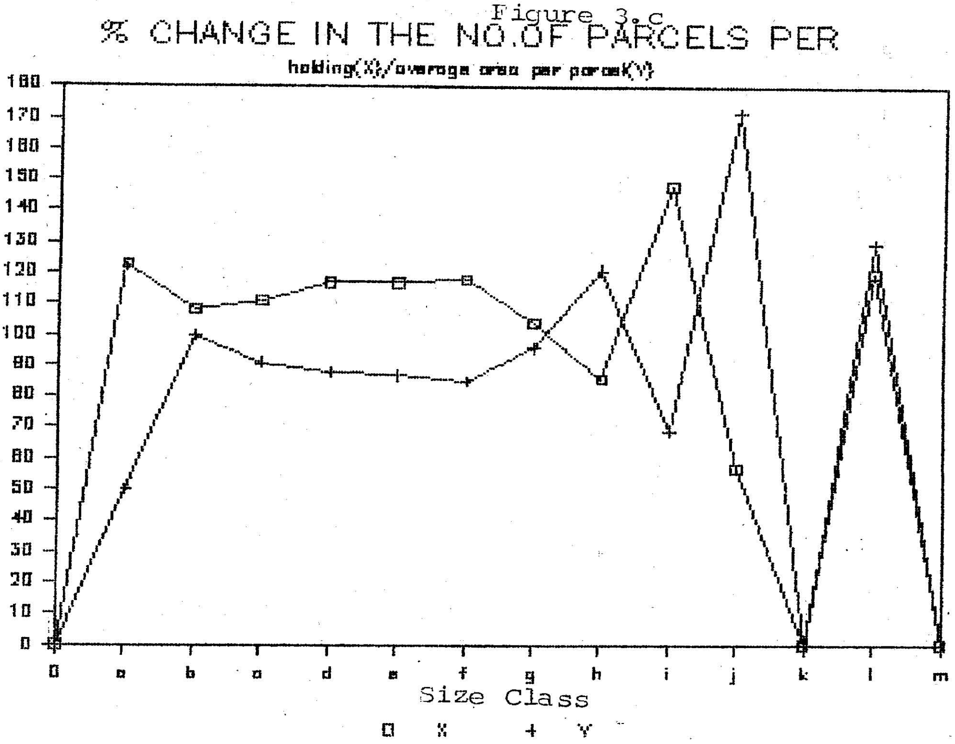


Figure 3.c



BIHAR

Figure 4.a

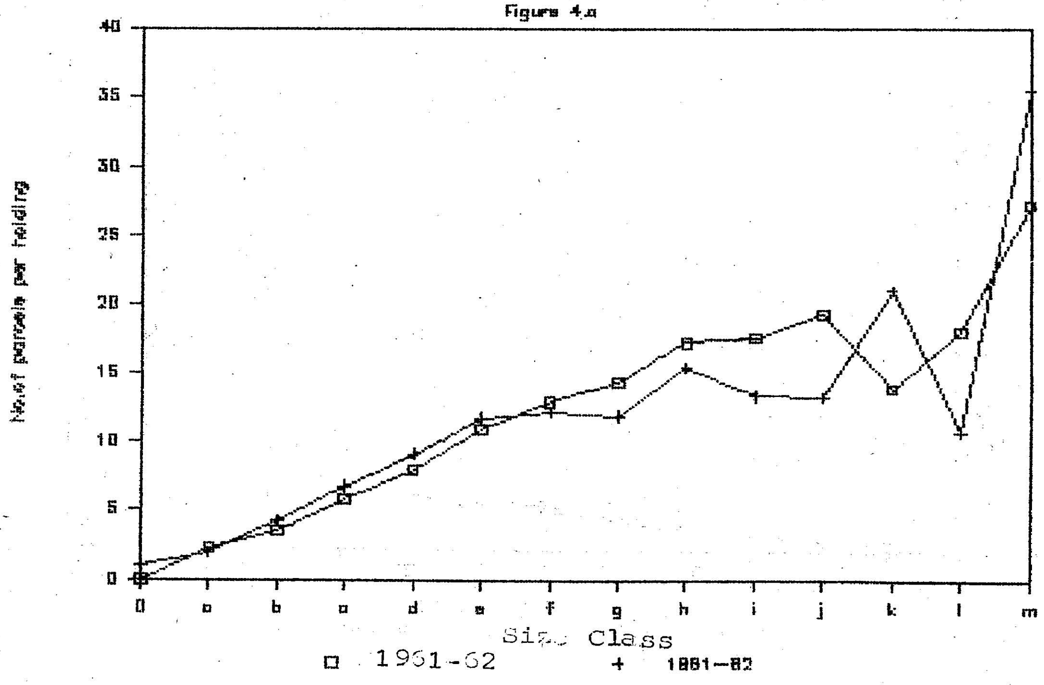


Figure 4.b.

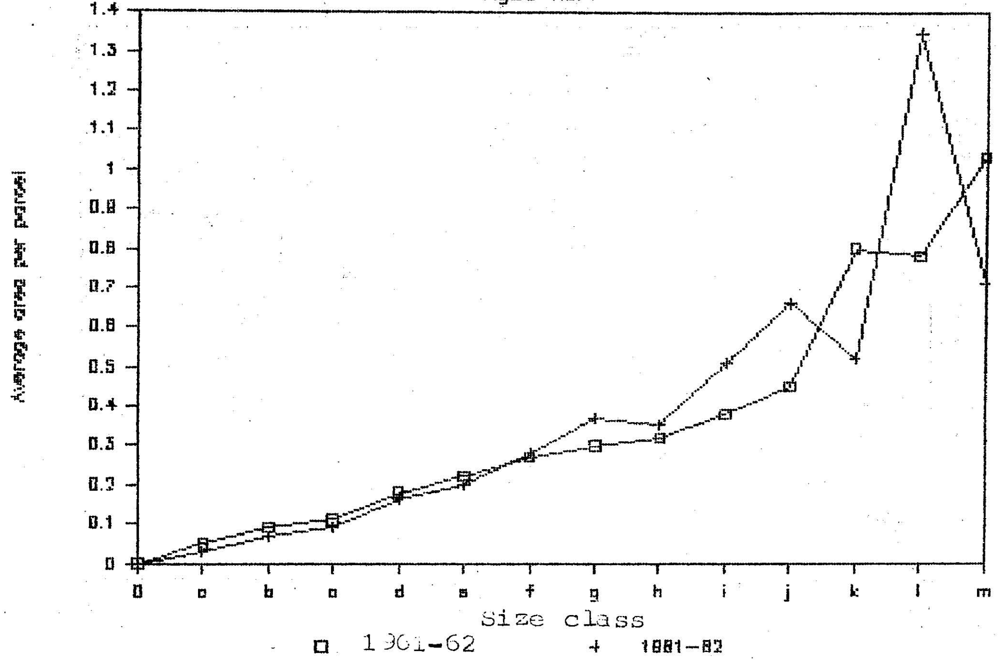
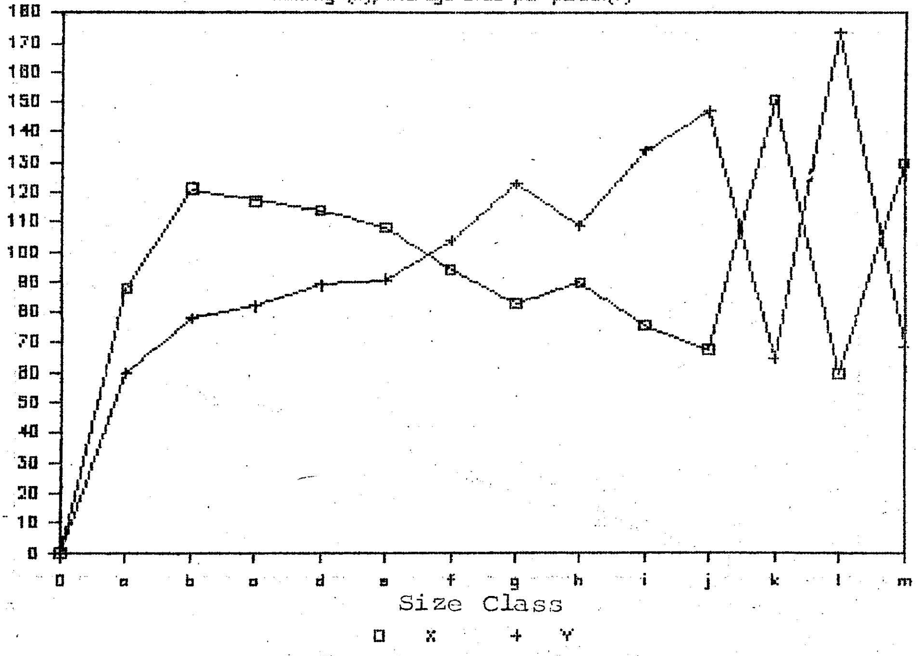


Figure 4.c

%change in the no.of parcels per holding (X)/average area per parcel(Y)



GUJARAT

Figure 5.a.

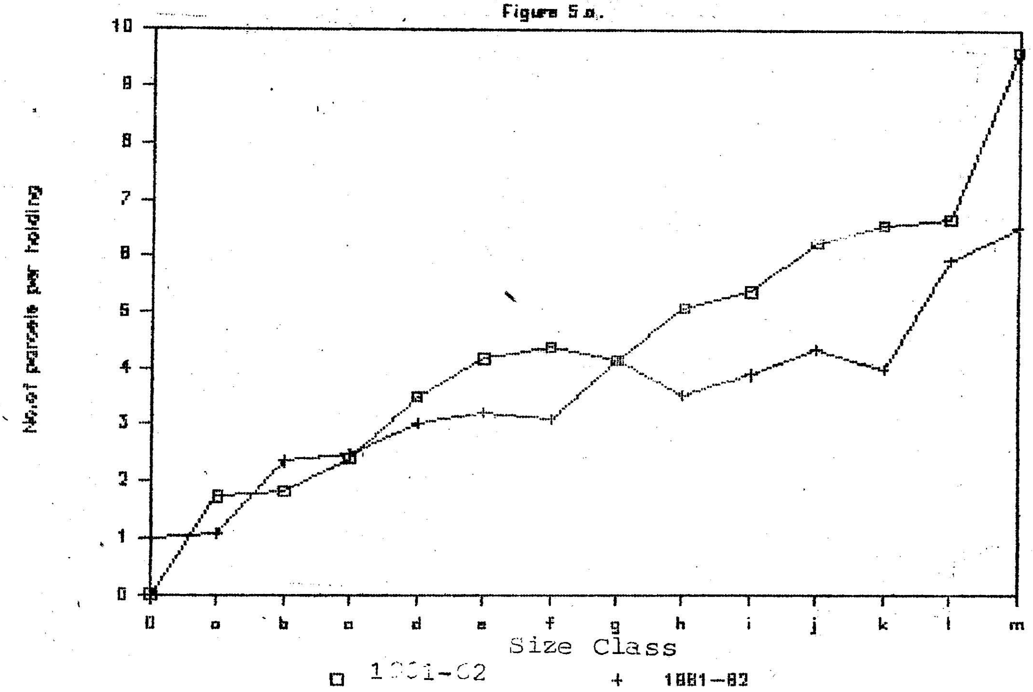


Figure 5.b.

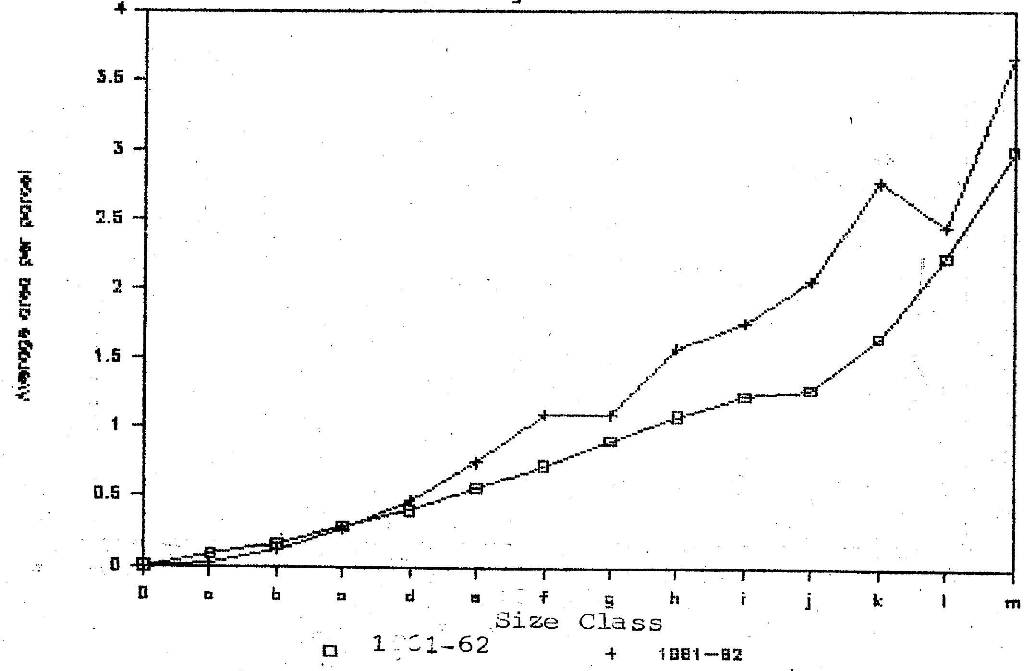
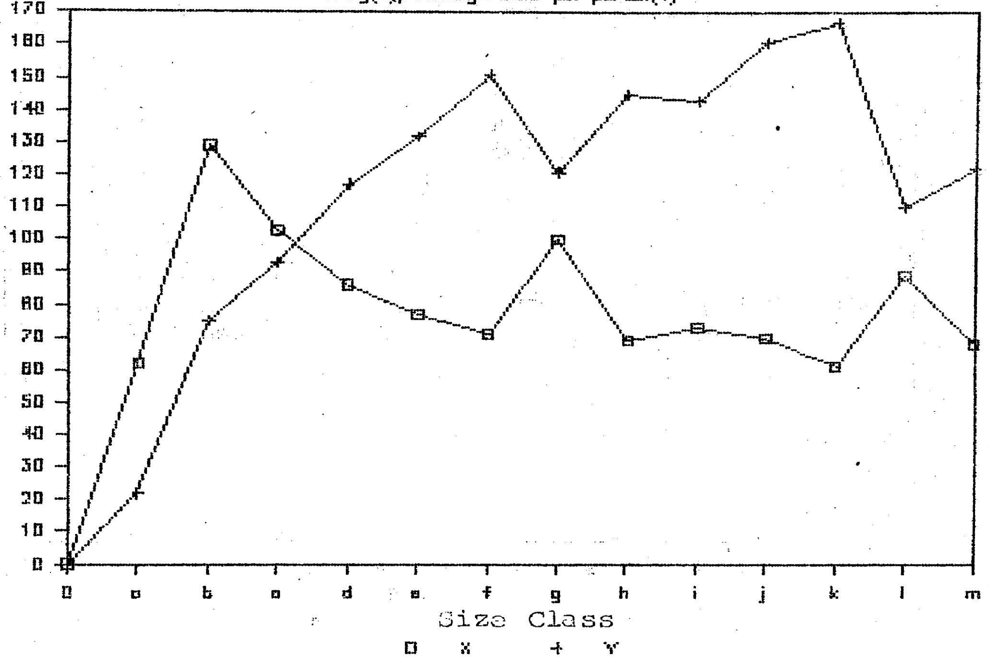


Figure 5.c

%change in the no.of parcels per

holding(X)/average area per parcel(Y)



JAMMU AND KASHMIR

Figure 8.a.

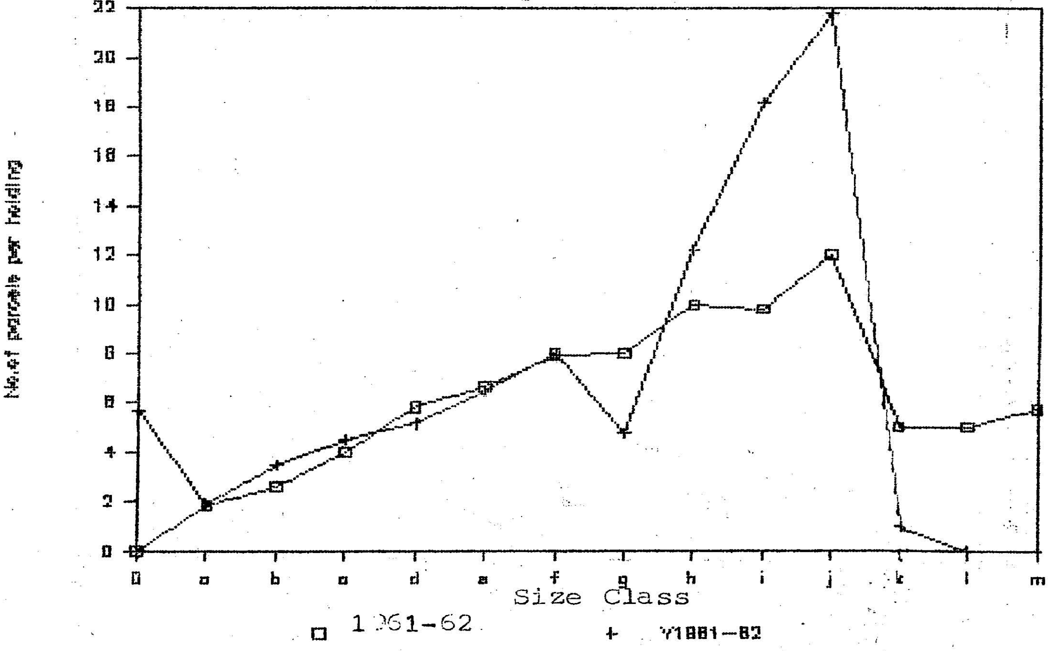


Figure 6.b.

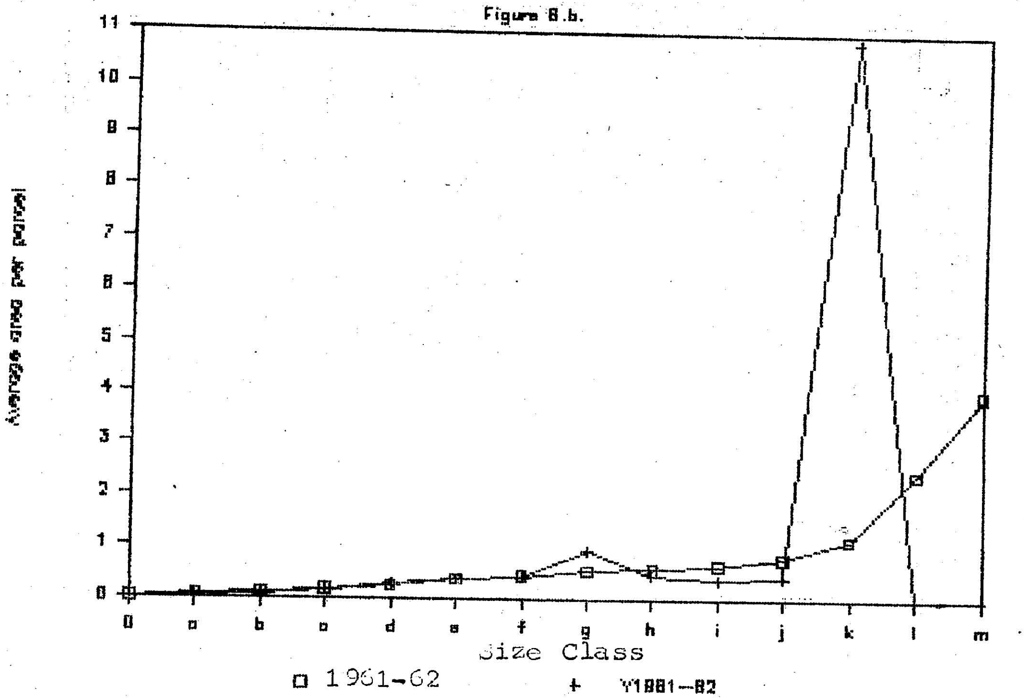
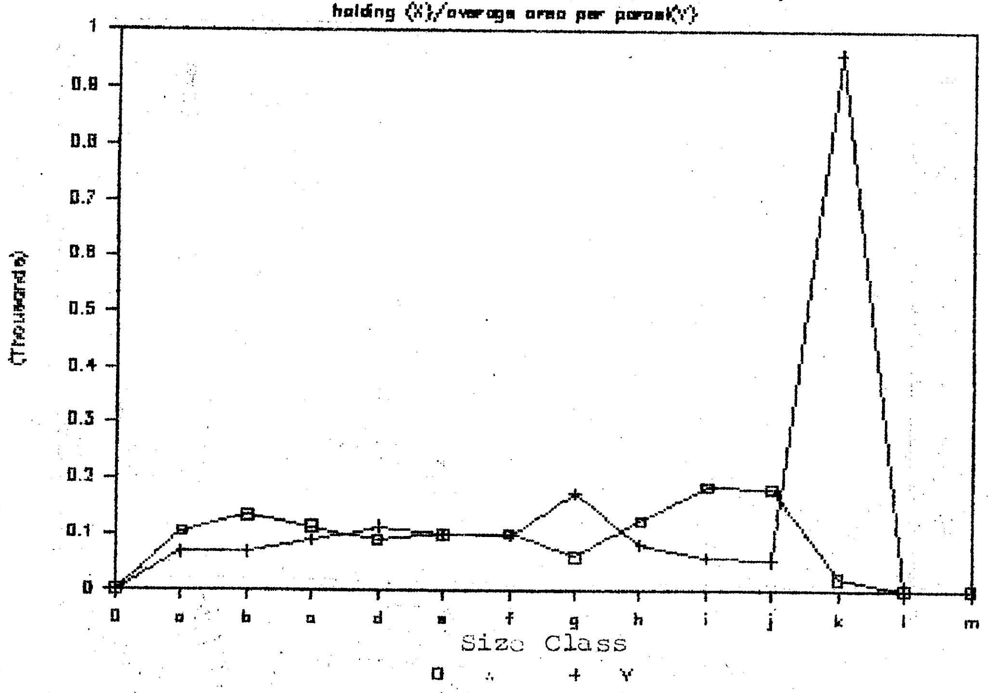


Figure 6.c

% Change in the no.of parcels per holding (X)/average area per parcel(Y)



KERALA

Figure 7.a

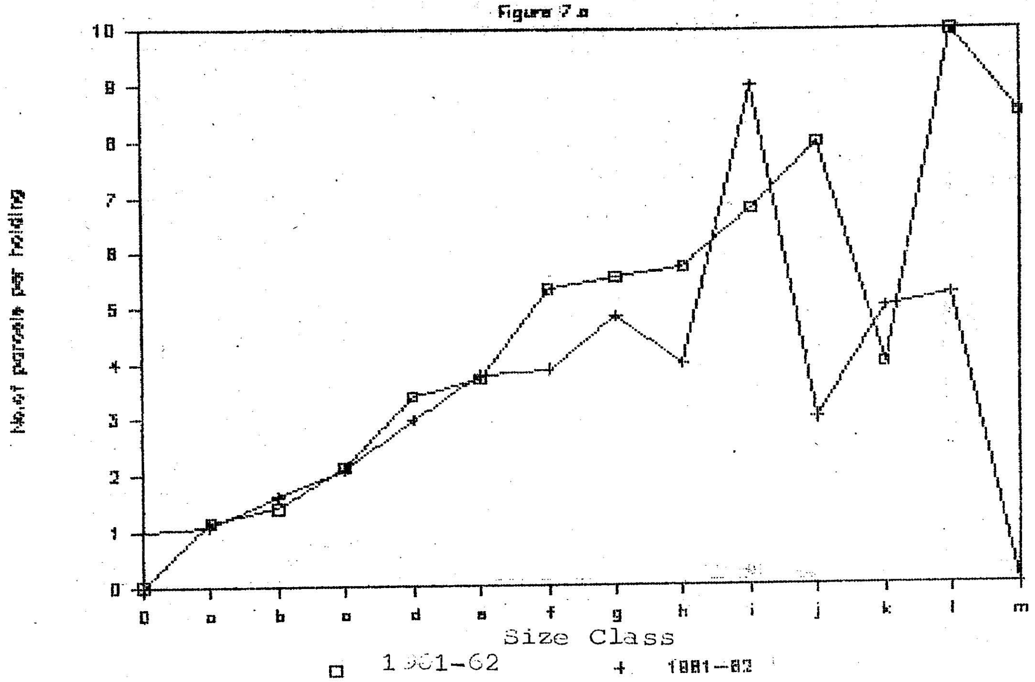


Figure 7.b.

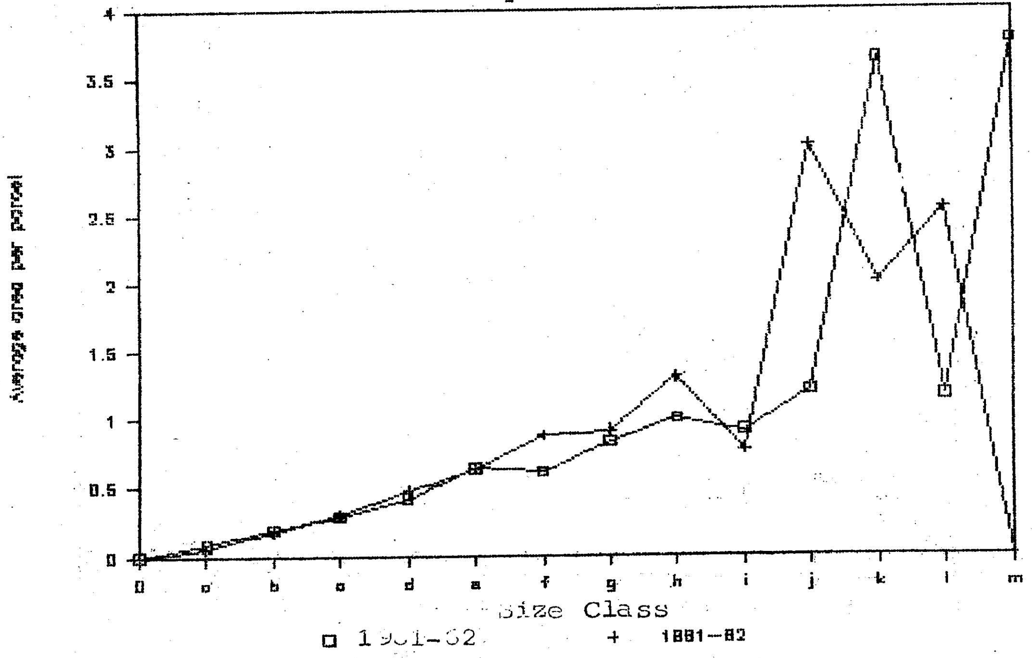
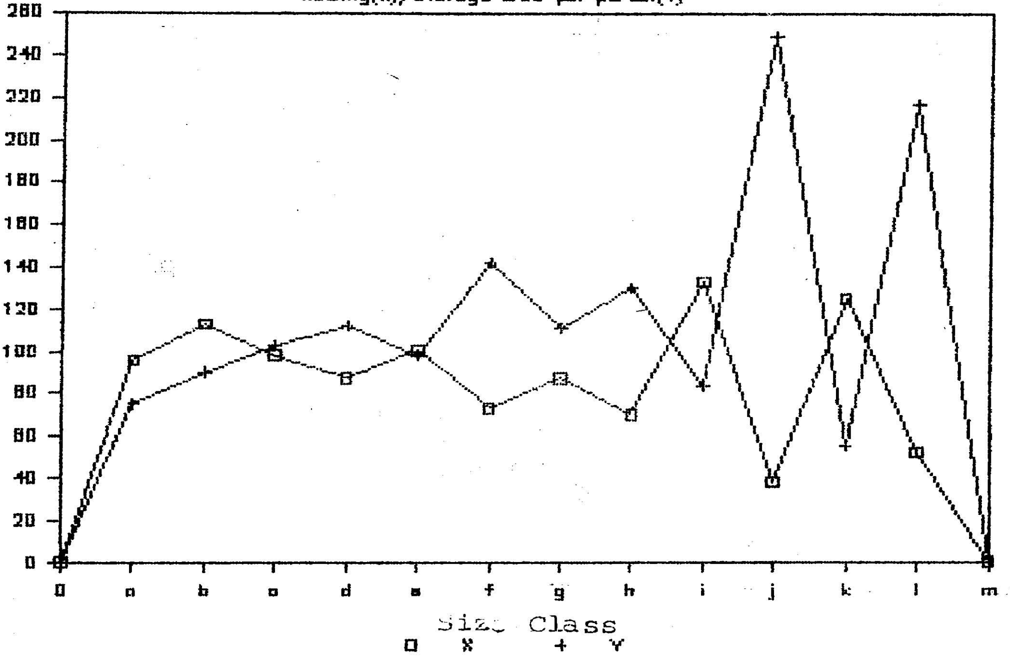


Figure 7.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



KARNATAKA

Figure 8.a.

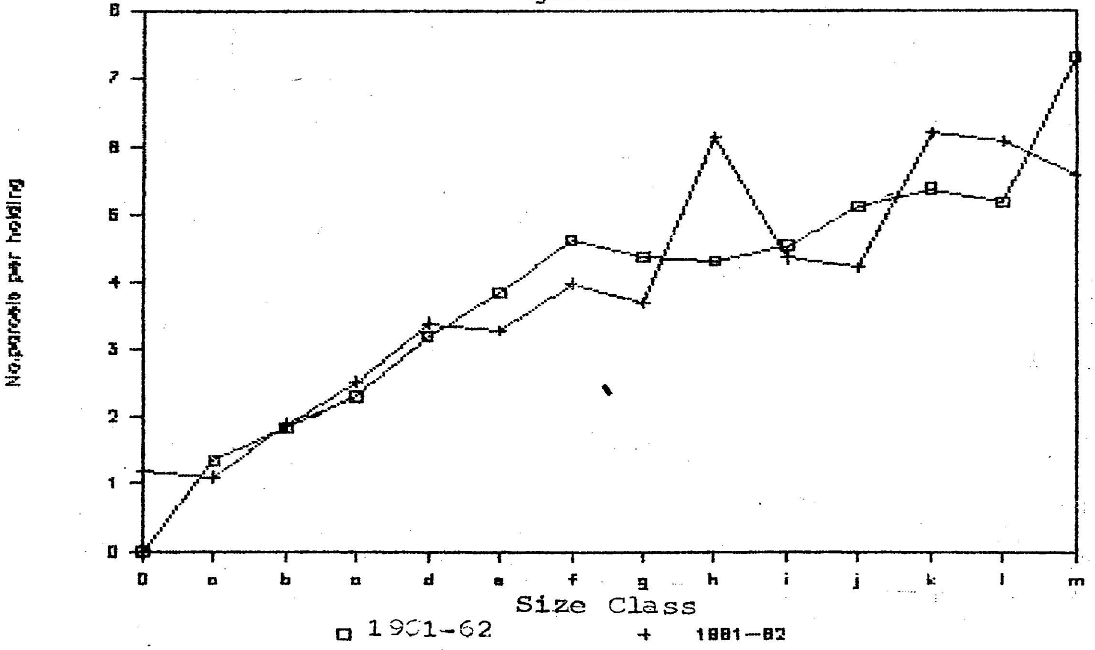


Figure 8.b.

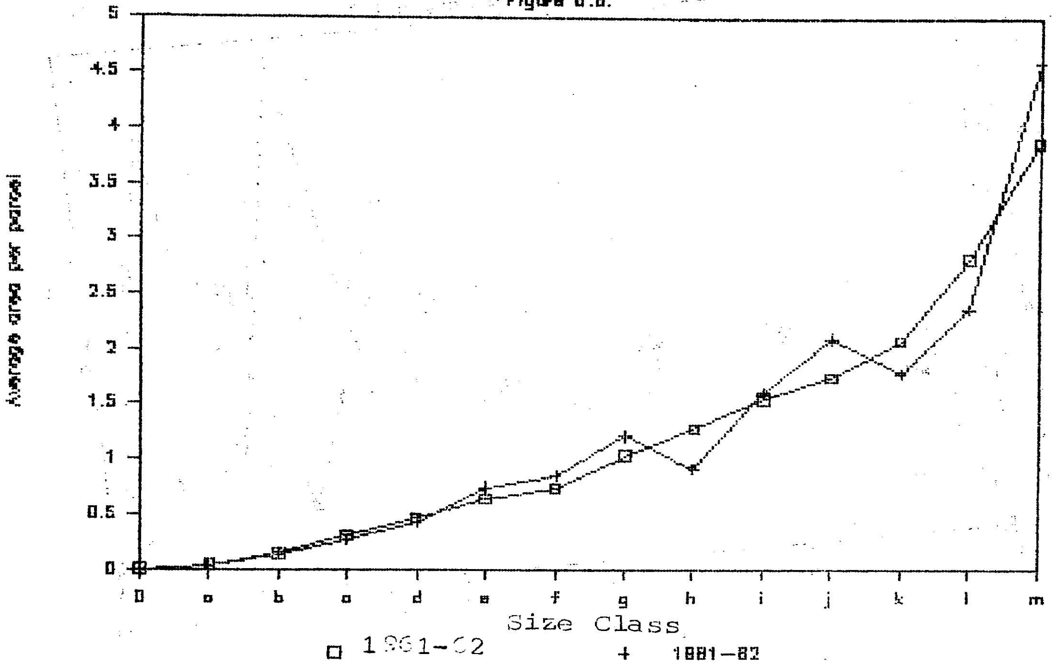
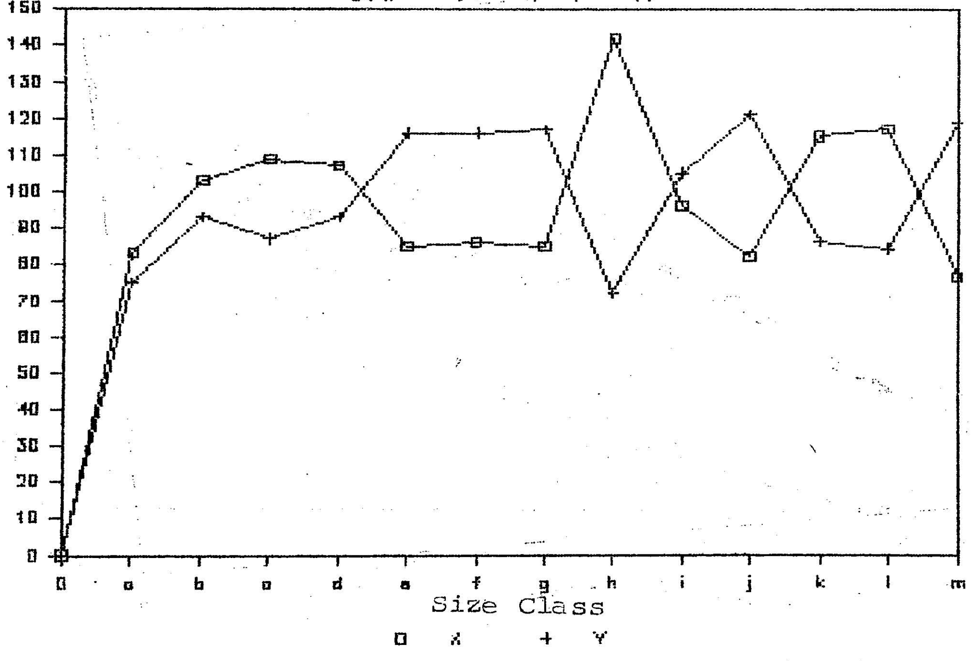


Figure 8.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



MADHYA PRADESH

Figure 8.a

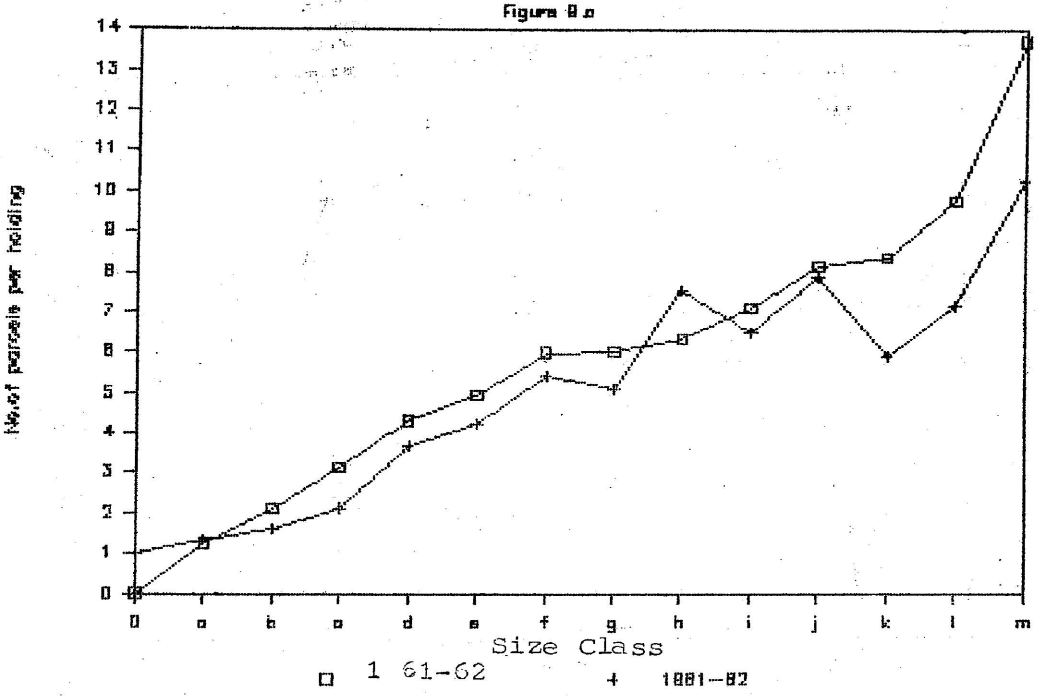


Figure 8.b.

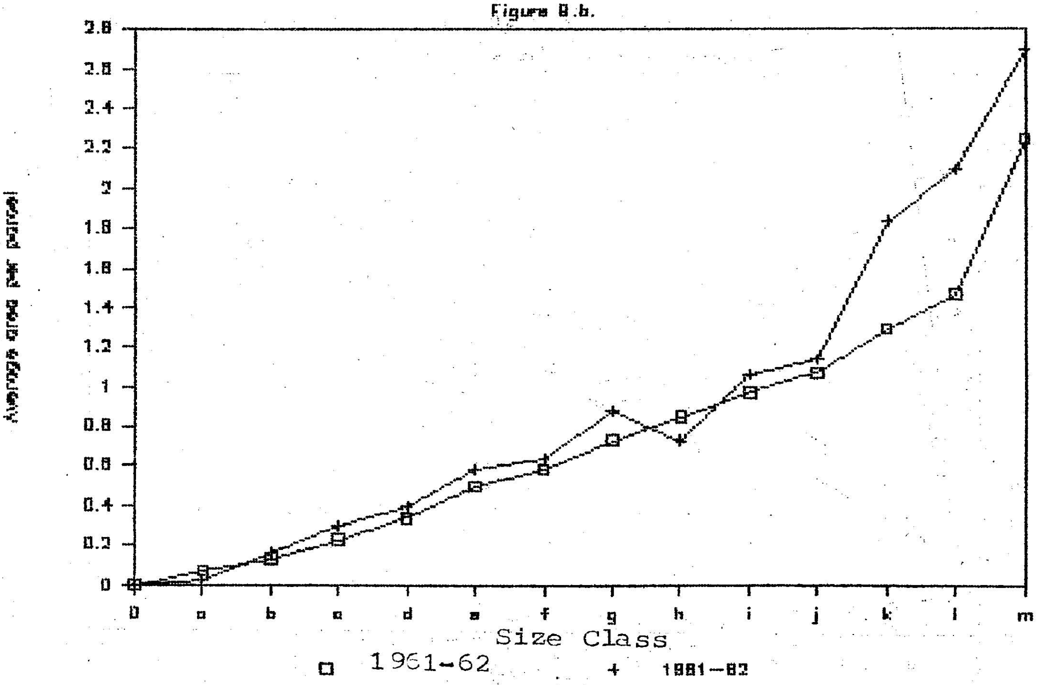
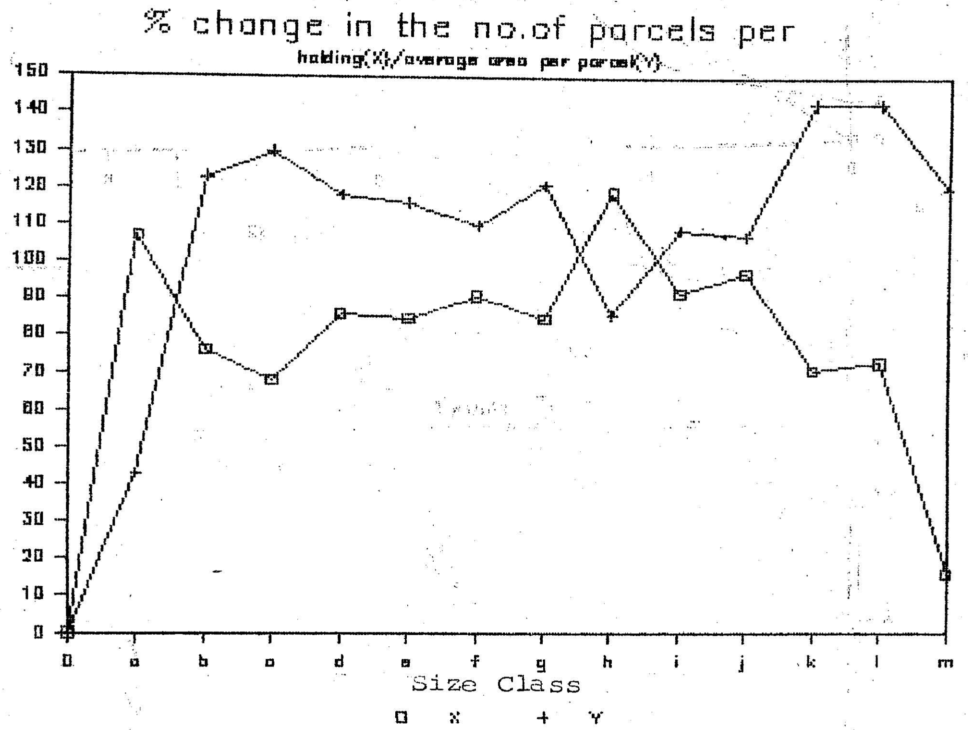


Figure 9.c


% change in the no.of parcels per
holding(X)/average area per parcel(Y)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
a
b
c
d
e
f
g
h
i
j
k
l
m
Size Class
X
Y

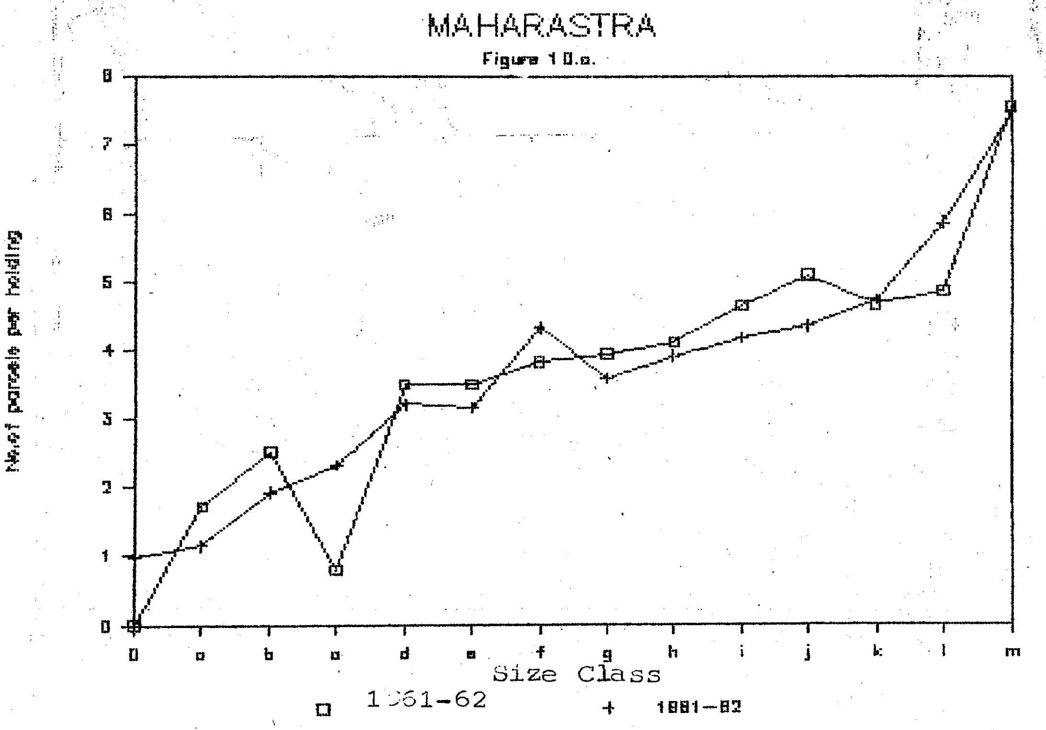

MAHARASTRA
Figure 10.a.
No.of parcels per holding
8
7
6
5
4
3
2
1
0
0
a
b
c
d
e
f
g
h
i
j
k
l
m
Size Class
1961-62
1981-82

Figure 10.b.

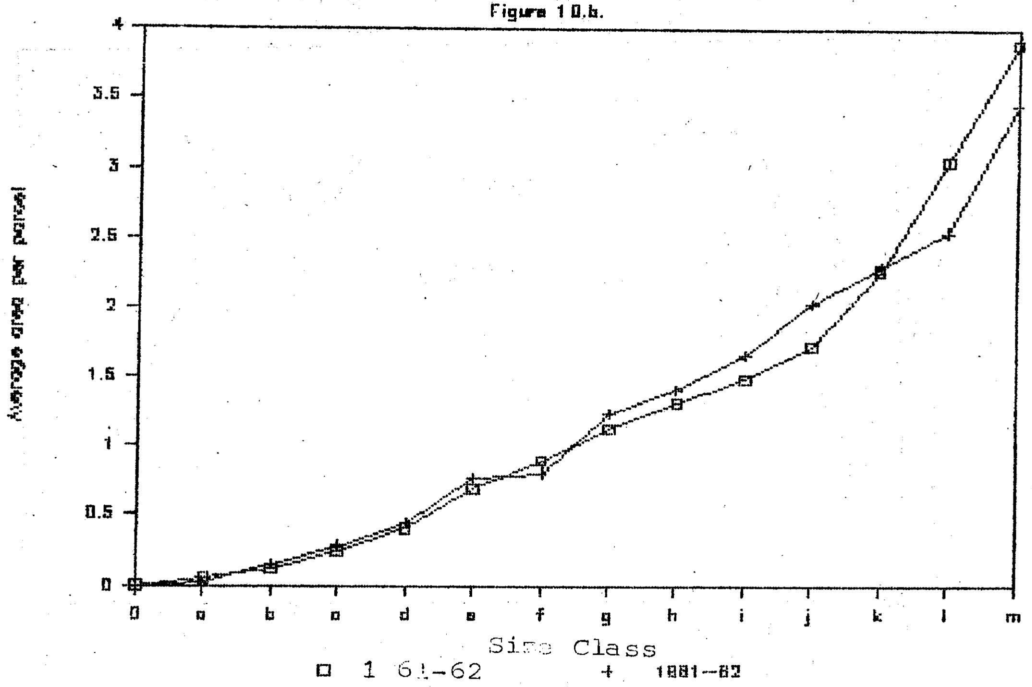
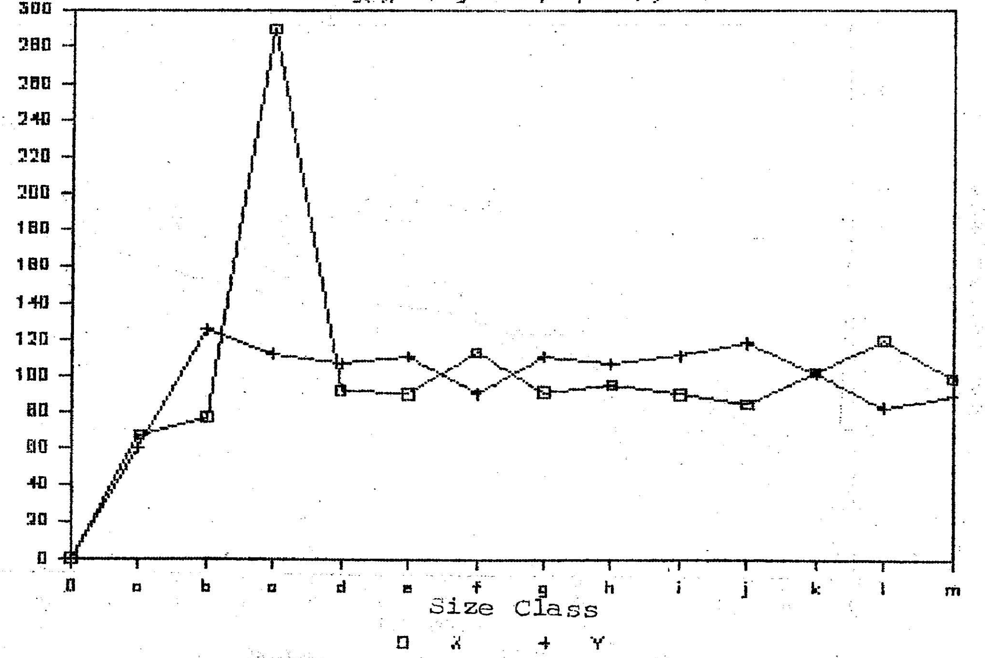


Figure 10.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



ORISSA

Figure 11.a

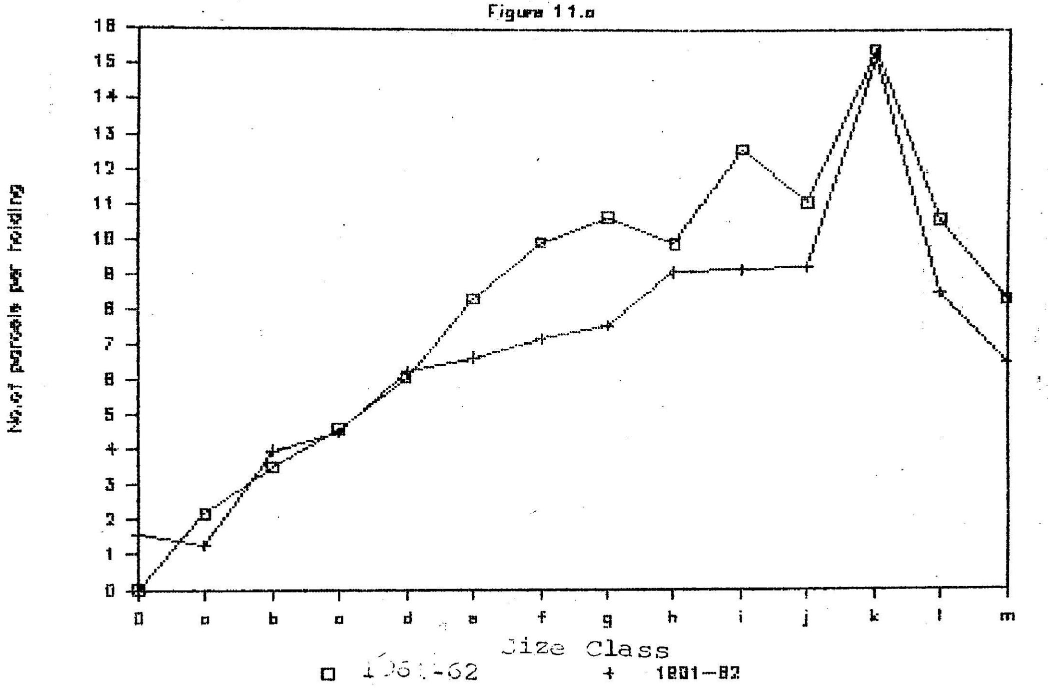


Figure 11.b.

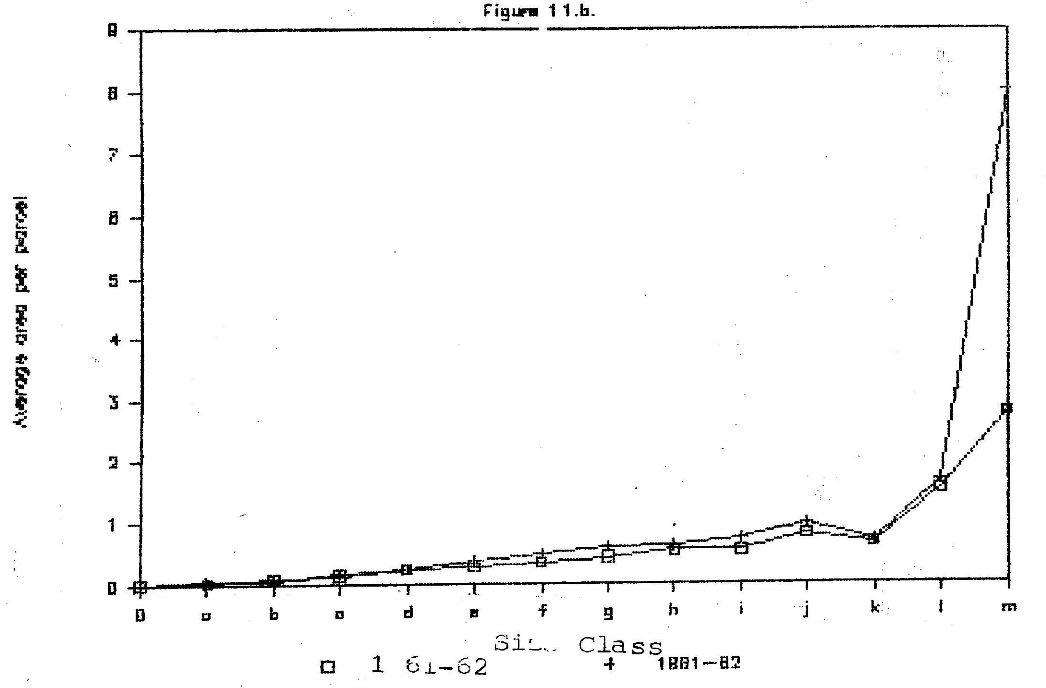
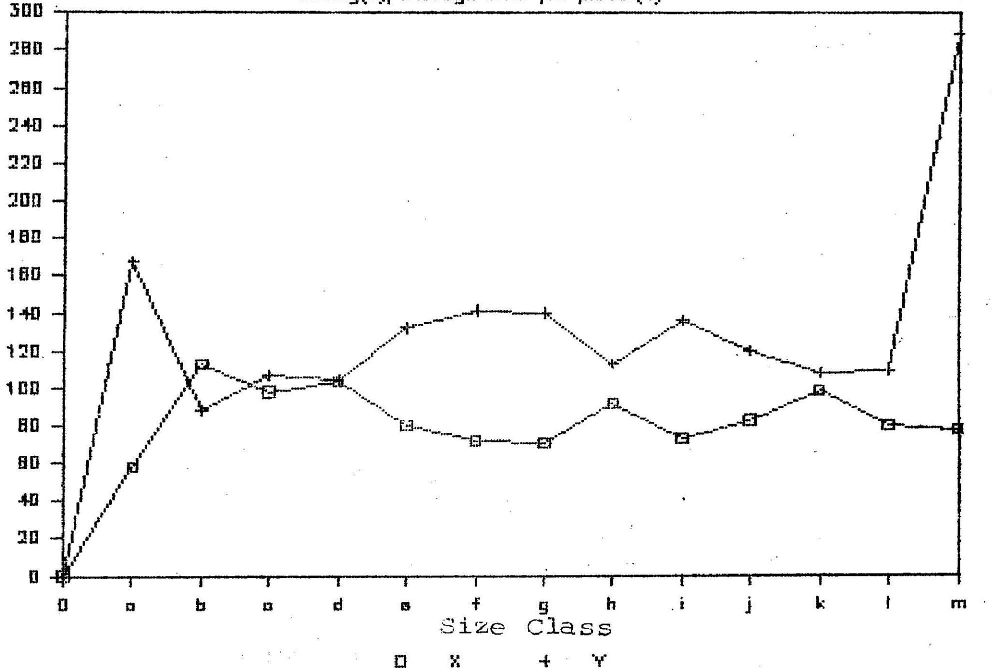


Figure 11.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



PUNJAB

Figure 13.a

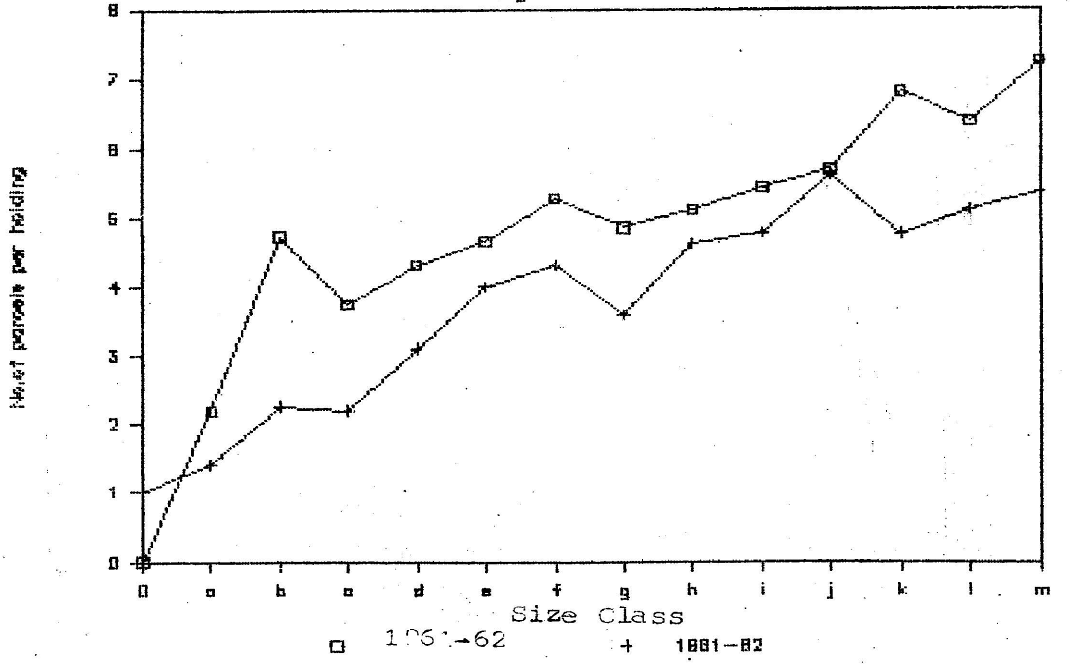


Figure 12.b.

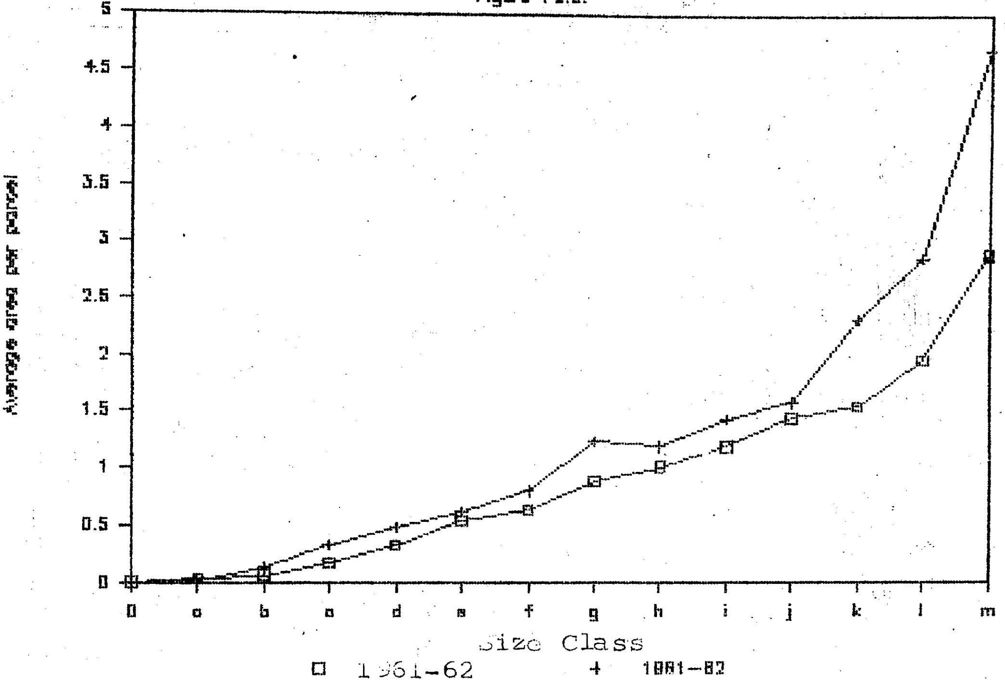
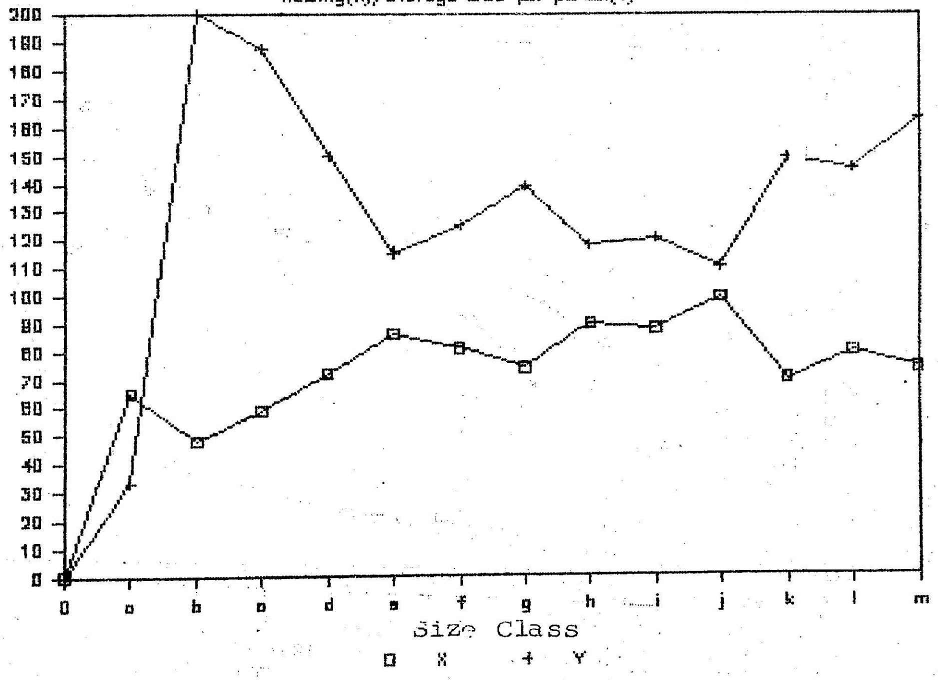


Figure 12.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



RAJASTHAN

Figure 13.a.

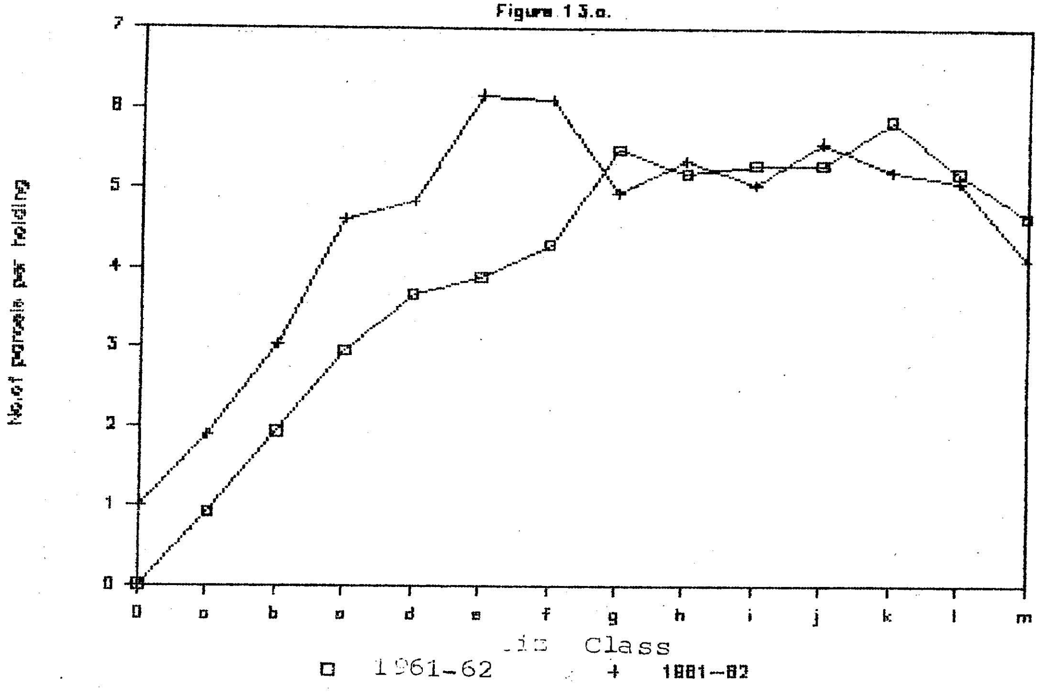


Figure 13.b.

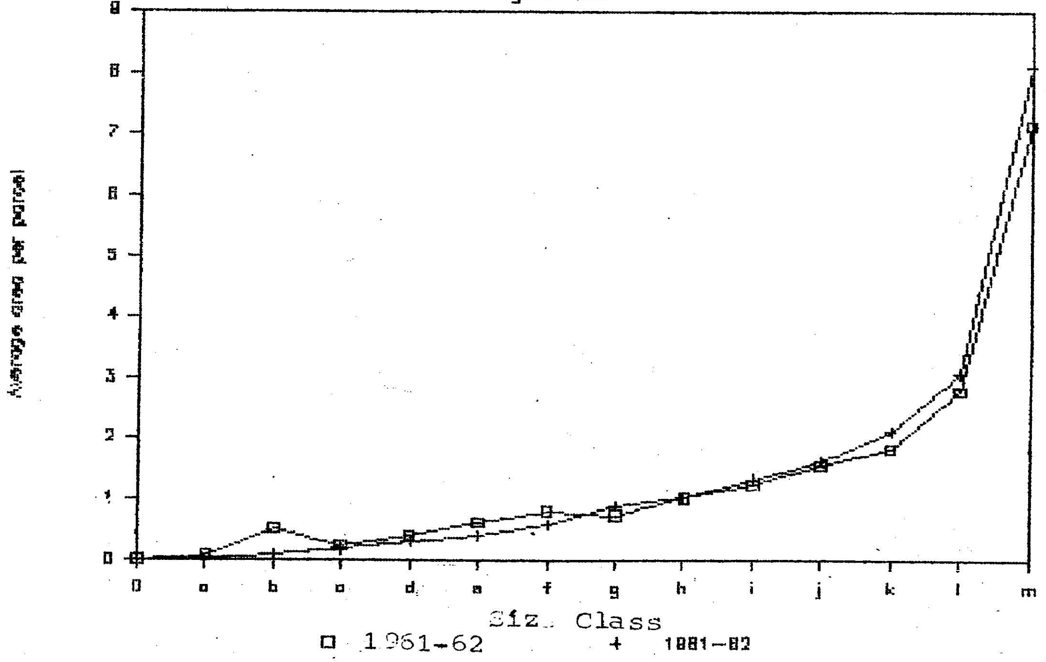
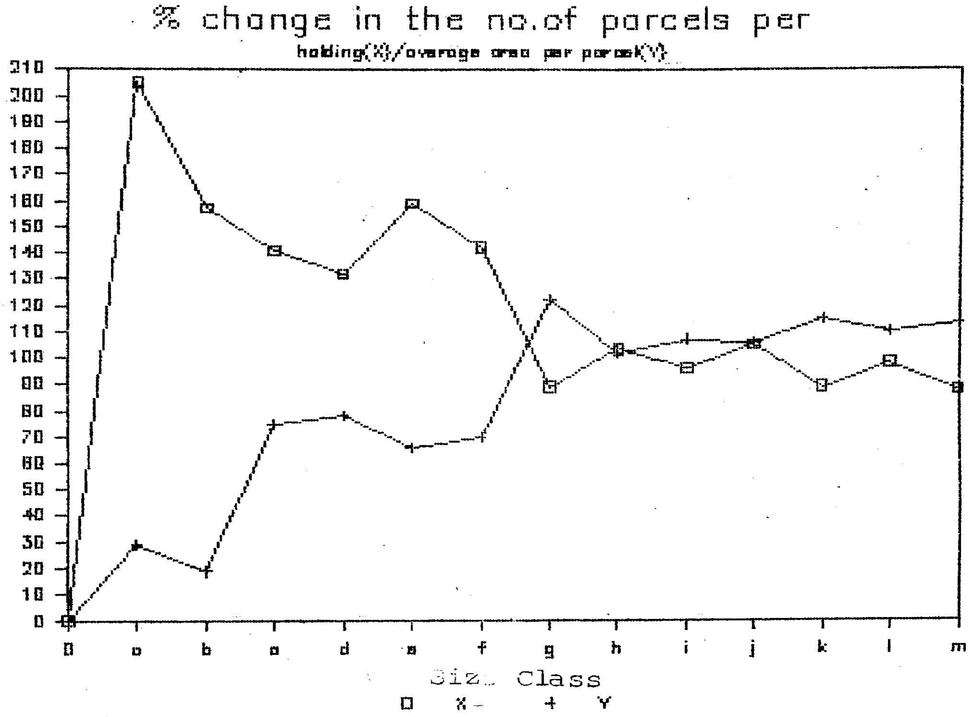


Figure 13.c



TAMIL NADU

Figure 14.a.

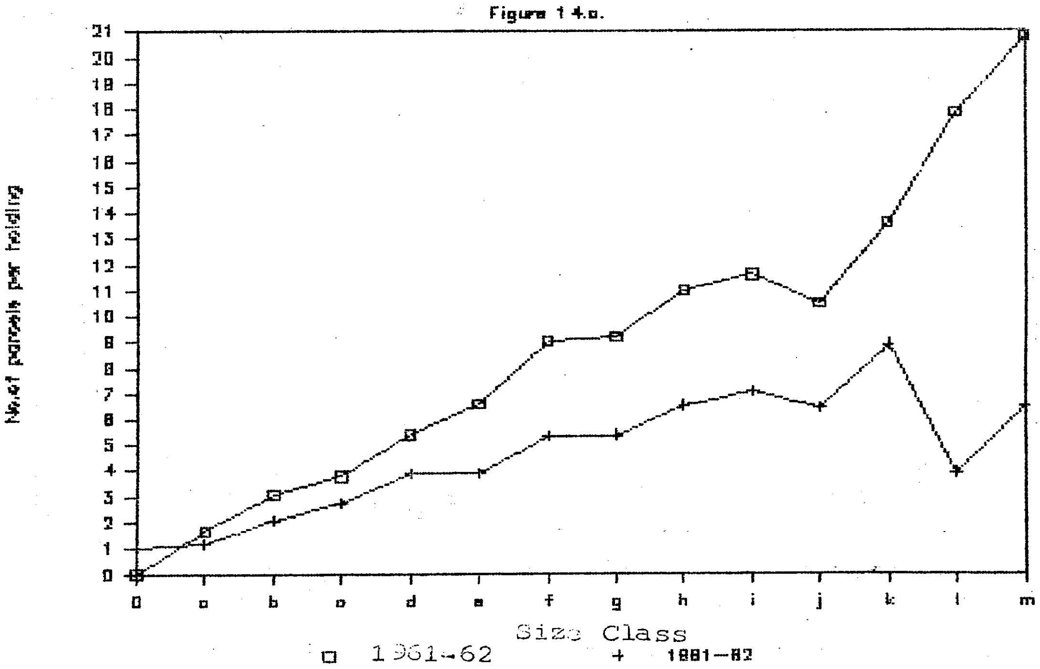


Figure 1 4.b.

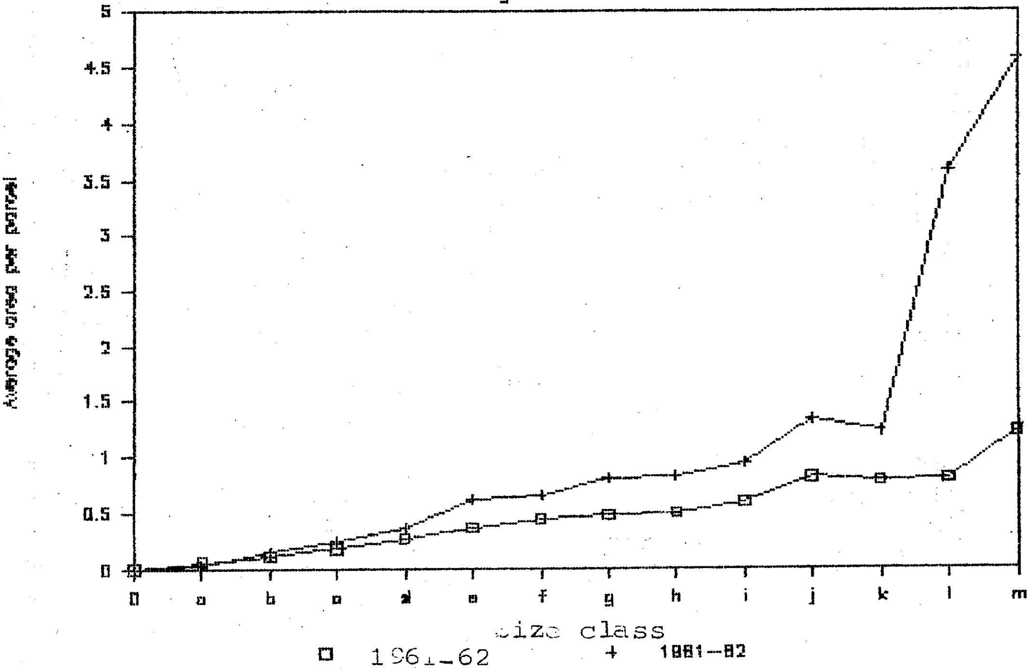
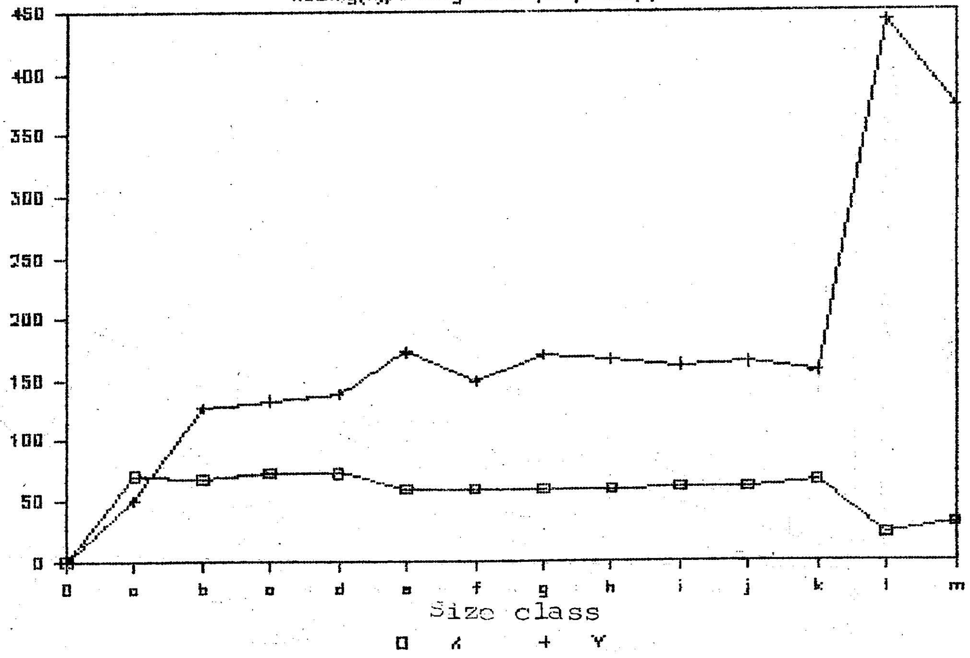


Figure 14.c.

% change in the no.of parcels per holding(X)/average area per parcel(Y)



UTTAR PRADESH

Figure 15.a

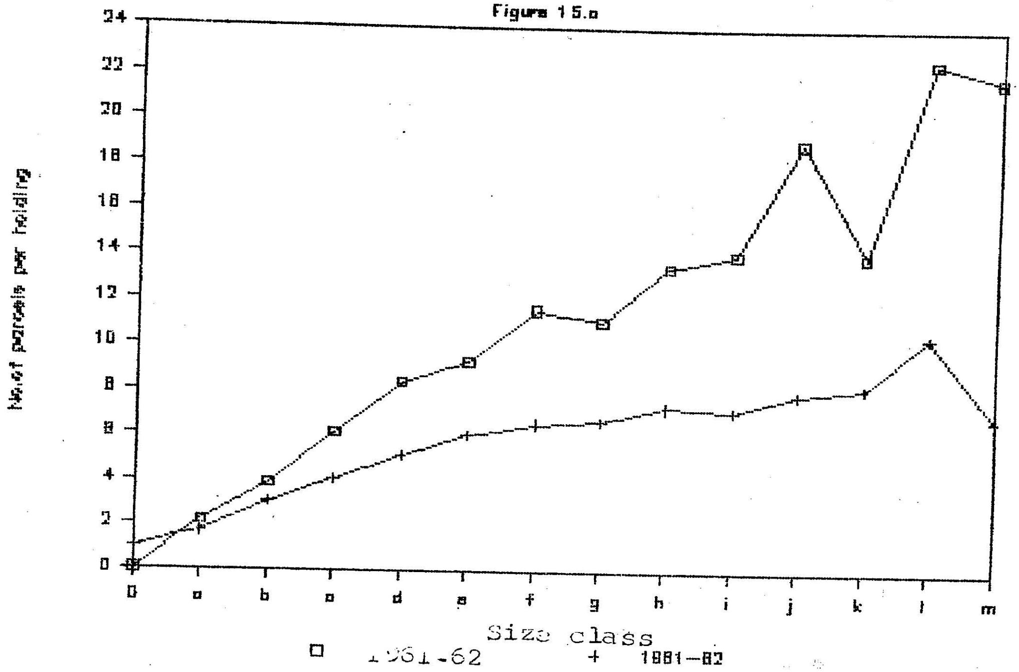


Figure 15.b.

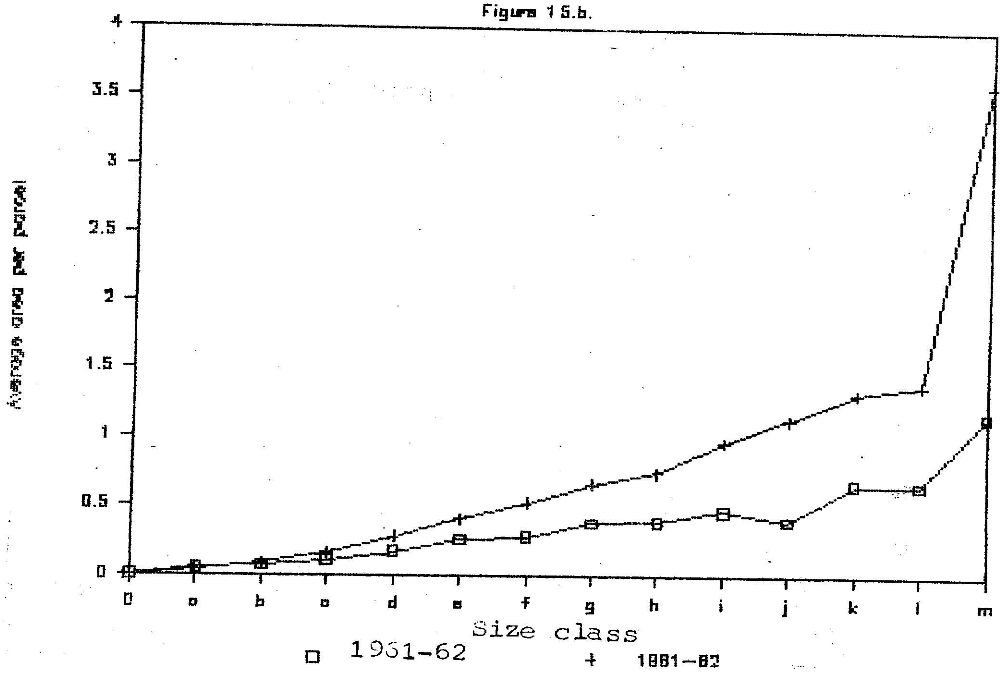
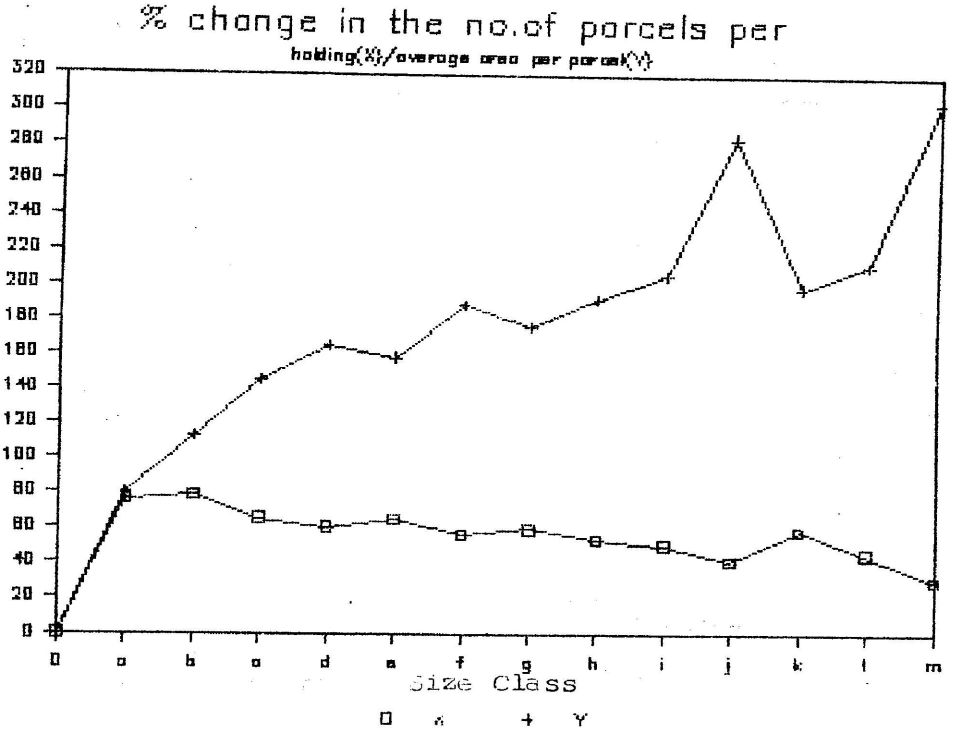


Figure 15.c



WEST BENGAL

Figure 18.a.

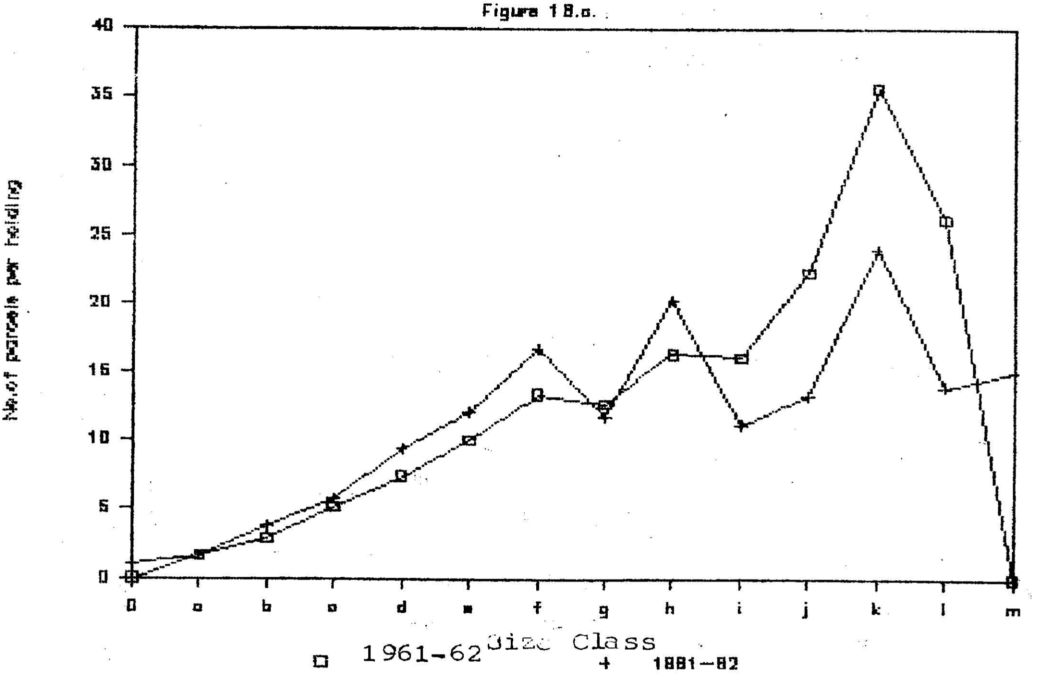


Figure 16.b.

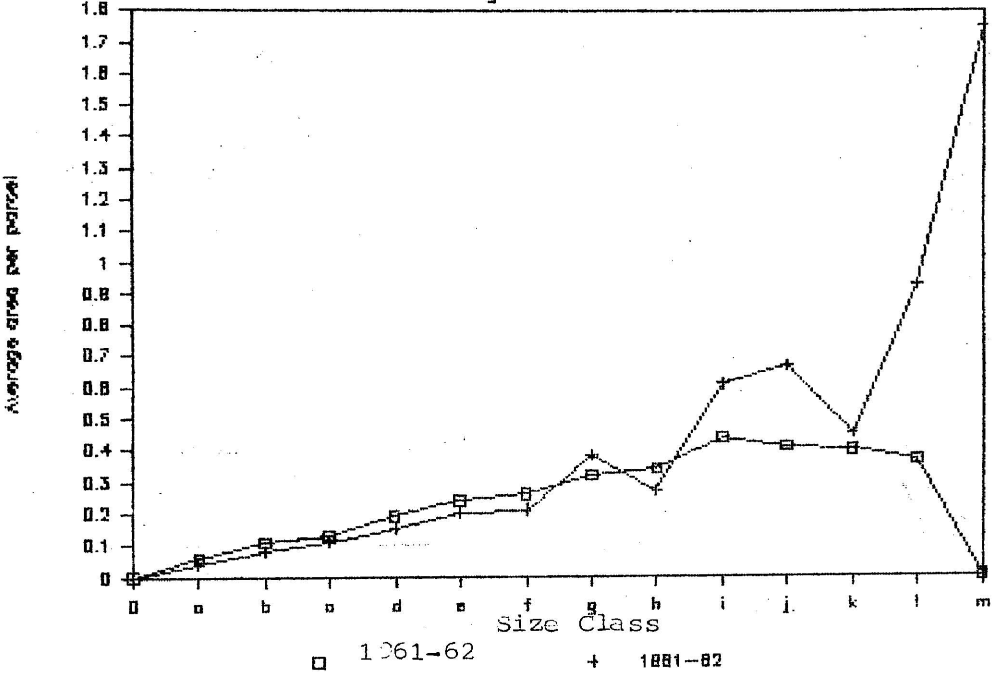
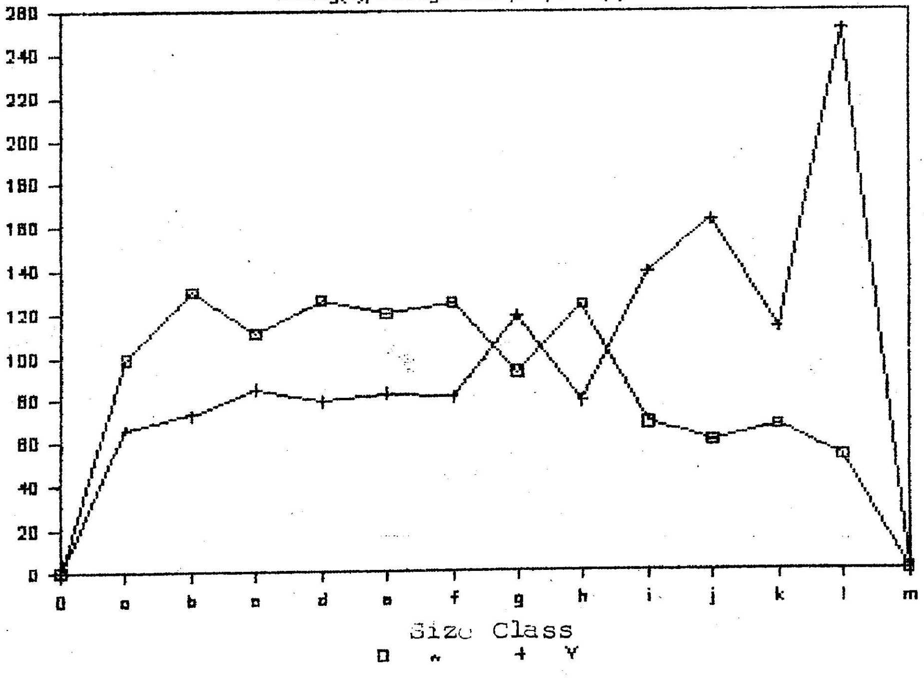


Figure 16.c

% change in the no.of parcels per holding(X)/average area per parcel(Y)



Footnotes

1. Under the system of Mitakshara, when father is alive his sons have equal rights on the property that he has. This is because ownership right begins at birth. In Dayabhaga, when father is alive his sons have no right at all to the property. Once father dies his sons are eligible to share the ancestral property. For more details see: Roy Prannoy "sub-division of land and soil quality biases: A Study of property rights in Indian agriculture", Indian Journal of Agricultural Economics, Vol.XXXVIII, No.2 April-June, 1983.

2. Bandyopadhyay. D, Land Reforms in India: An Analysis, Economic and Political Weekly, Vol.XXI, Nos.25 and 26, June 21-28, 1986 P.A-50.

3. Kurien, C.T., Planning and the institutional transformation of the Indian Economy, Social Scientist, Vol.15, July 1987 P.9

4. Guhan S. and Joan P. Mencher, Iruvelpattu Revisited, Working Paper No.28, Madras Institute of Development Studies, Madras, 1982 P.37

5. Government of India, National Sample Survey (NSS) Number 144, Tables with notes on some aspects land holdings in rural areas, Seventeenteenth Round Sept. 1961-July 1962, Delhi 1968.

6. Government of India, NSS Number 331, Report on land holdings-2: Some aspects of operational holdings, Thirty Seventh Round Jan- Dec.1982, New Delhi 1986.

7. Govt. of India, Report of the National Commission on Agriculture 1976, Part XV, Agrarian Reforms, Ministry of Agriculture & Irrigation, New Delhi, 1976.

8. Government of India, NSS No.331 op. cit.p.6

9. Ibid P.8

10. Government of India, Consolidation of holdings (methods and problems), Planning Commission, Delhi 1957 p.2

11. Moomaw R W. The farmer speaks, Oxford University Press, 1959 as quoted in Bansil P.C. "consolidation of holdings in India Agricultural Situation in India, Vol.XIV, No.8 Nov.1959, p.85

12. Singh Rajendra, "Impact of consolidation of holdings on labour absorption and employment of cultivating households in Eastern UP". Agricultural situation in India. Vol.XXXIX No.1 April 1984, pp 15-19.

13. Government of India, Ministry of Home Affairs, Report of the Commission for Scheduled Castes and Scheduled Tribes (April 2 March 1983) Fifth Report, 1985, P.53.

14. The definition of an operational holding is not uniform in the two NSS reports referred to: The holdings used exclusively for livestock & poultry raising and for production of livestock & poultry products and/or pisciculture were also considered as operational holdings in the NSS Report No.331 while these were not considered as an operational holdings in the NSS report No.144. But these difference in the definition is unlikely to alter the broad picture of the results.